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Better Homes and Gardens®

WOOD®

THE WORLD'S LEADING WOODWORKING MAGAZINE
APRIL 1997 ISSUE NO. 96

COUNTRY BUFFET & CUPBOARD

See it all on page 52

DUST COLLECTORS

The scoop on 25 models

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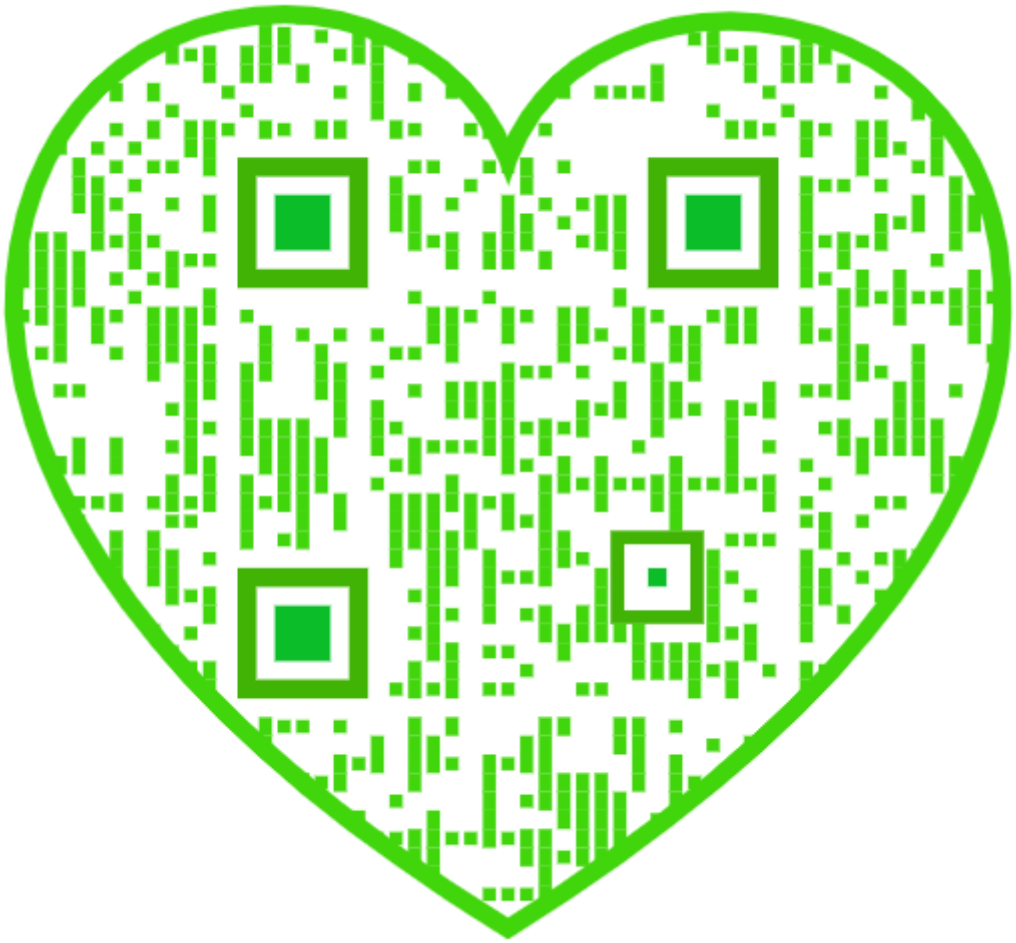

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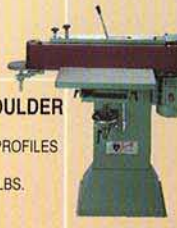

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•To accommodate the multitude of questions (and responses) posted on our online Discussion Group, we've categorized the site according to your interests. Got a woodworking question? Here's the place to post it. Or, just stop in and offer a little advice.

•Tired of searching through back issues for that special project you always wanted to build, but never had the time? Now, you've got the time, but not the issue? Try our highly visited index for finding that project, feature, or technique.

THE EDITOR'S ANGLE

He Takes the Headaches Out of Finishing Wood

The *WOOD*® magazine gang listening intently as Bob Flexner makes a point about stain penetration during his day-long finishing seminar.

Like most other woodworkers, I would rather walk barefoot over hot coals than spend the time it takes to apply a fantastic finish to my woodworking projects. Nonetheless, it's a chore that must be tended to.

Imagine my surprise, then, when at the International Woodworking Fair last summer in Atlanta, finishing expert Bob Flexner stopped by the *WOOD* magazine booth to chat. (Bob is the author of a 310-page book titled *Understanding Wood Finishing, How to Select and Apply the Right Finish.)*

While at the booth, Bob went on about his thoughts on finishing. After listening for what seemed like a half hour, I was exhausted. But it was easy to see he passionately believed what he was saying, so I asked him to come to Des Moines and give the *WOOD* magazine staff a full-day seminar covering the topics in his book.

He, in turn, promised that at the end of the day, everyone would know all they needed about the subject. How could I resist?

Bob's presentation was informative, alright, so much so that by the end of the day, the staff had information overload. But I'll try to summarize briefly several of his more interesting points:

•There's a lot of misinformation "out there," so you have to educate yourself and know what each type of product does;

•The FDA has approved all common ingredients used in all woodworking finishes, so you can use any of them on projects that may come in contact with food or children;

•The primary reason you need to finish wood at all involves slowing moisture exchange between the wood and the surrounding environment; and

•Gel stains work well in reducing blotching, but they don't bring out the depth in wood.

I could go on and on, but if you want to learn more, I recommend springing for Bob's book from Rodale Press (800/848-4735), $14.95 paperback. It's full of easy-to-understand information and advice that will make you a better finisher. Thanks, Bob, for sharing your expertise with us.

Larry Clayton

Print this article

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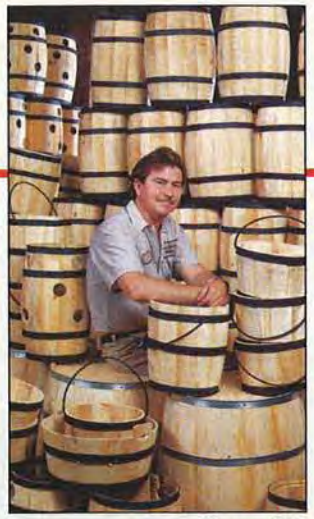

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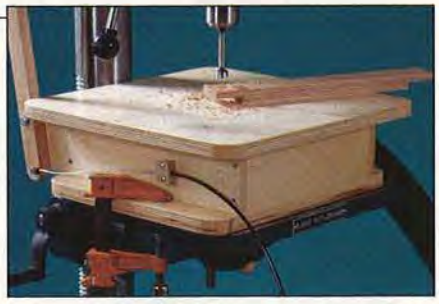

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This issue's cover wood grain: bird's-eye white ash

Independent Tests Reveal New Cordless Drills The Competition.

Model 9862

In head-to-head comparisons, Porter-Cable's new 12 volt cordless drill put the screws to all the rest. Against seven different drills in seven different categories, Porter-Cable came out first in five out of seven and a close second in the other two. With more torque, higher performance and longer life.

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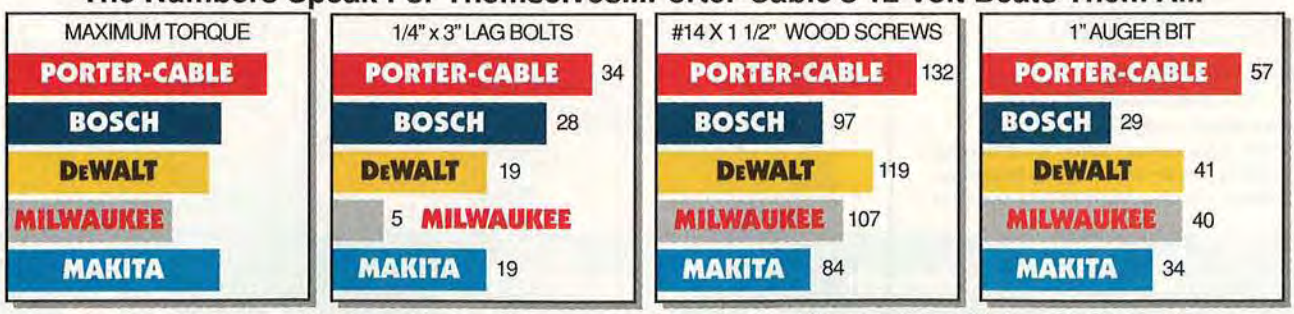

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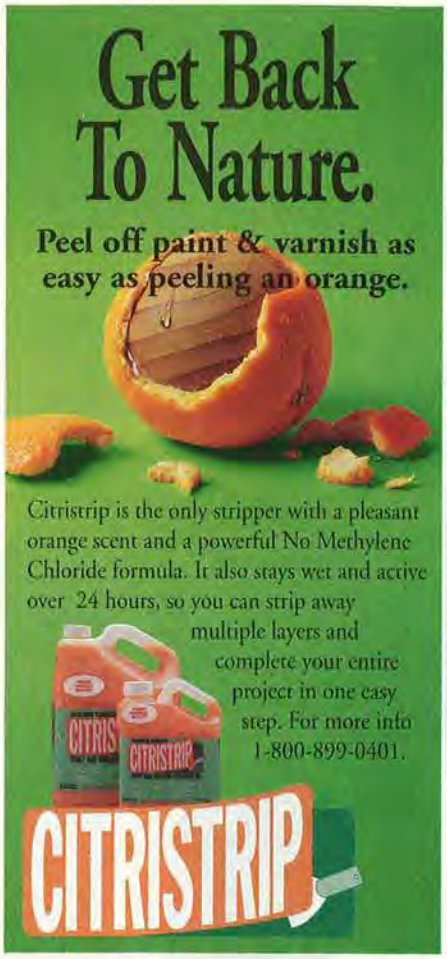
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TALKING BACK

One reader likes the service of Freud

I read the article on carbide router bits in the December 1994 issue, and decided to buy a stile-and-rail bit set. I chose the Freud set and was extremely pleased with the results. Recently, I had reason to be even happier with my decision.

While changing these bits, I dropped the stile cutter onto the floor. I figured I would have to buy a new set, but a friend suggested that I call Freud to see if it could be repaired.

I phoned the company, and a representative recommended that I send the broken bit in for repair. I did so, and a few days later I received a package from Freud containing a complete new set of bits in place of the one I broke. Now I know what its lifetime guarantee means. Thank you Freud!

—William E. Poulson, Martinez, Ga.

How to reach us

We welcome comments, criticisms, suggestions, and even compliments. And you're sure to hear back from us, perhaps on this page! You can "talk back" by one of several ways:

- ***Via mail.*** Send your letter to Talking Back, WOOD® magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.
- ***Via computer.*** Send your e-mail to one of these addresses:

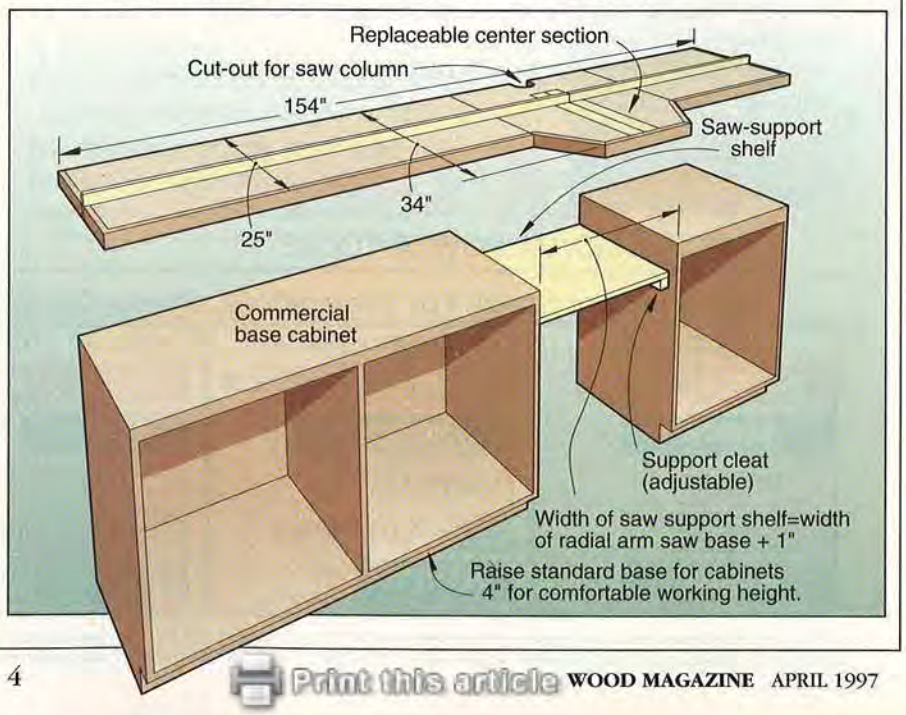
CompuServe: 74404,3516
Internet: 74404.3516@compuserve.com

Radial-arm saw support

I've seen pictures of the radial-arm saw in the *WOOD* magazine shop that appears to be placed on a stand between two cabinets. Do you have plans for this stand?

—Brad Kronsbein, Stockbridge, Ga.

Brad, we haven't drawn up detailed plans for this saw support. However, it's a fairly simple item to build. It consists of a shelf, slightly larger than the base of the radial-arm saw, placed between two commercially-made cabinets. The top of the saw table support rests flush with the top of the cabinets. This creates a continuous shelf for supporting long workpieces. The drawing below gives the dimensions of the saw shelf and saw/cabinet top in our shop. The saw top includes a replaceable section in the center for saw kerfs.


Replaceable center section
Cut-out for saw column
154"
Saw-support shelf
34"
25"
Commercial base cabinet
Support cleat (adjustable)
Width of saw support shelf=width of radial arm saw base + 1"
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How to Price Your Work

Formulas are handy, but you need to know the market, too.

A Windsor chair made by West Virginia woodworker Wes Riggs can sell for $400 to $600. Yet Rhode Island cabinetmaker David Kiernan once sold an artistic wood-and-metal chair for $2,450.

They're both chairs. They're both made by top-notch craftsmen. And while Kiernan's chair probably took twice as long to make as one of Riggs', the labor and material alone can't explain the fivefold difference in price.

Pricing is a tough job in any business, but particularly in fields like woodworking, where the individuality of woodworkers and their products make comparisons tough. Worse still, you may make your first pricing decision on the spur of the moment, such as when a friend sees something you made and asks what you'd charge to make him one. That's why it's important to think about pricing *before* you start selling.

How to establish a formula

The formula approach is one way to set a price. With it, you plug numbers into a formula.

First, you include any material costs. Then you add a *shop rate*, which is an hourly rate for shop expenses (overhead) and labor. To calculate a shop rate, total your annual costs for tools, shop space, insurance, utilities, marketing, and other business-related expenses, and divide them by the total hours you expect to do productive work in a year.

To determine your *labor rate* (what you'll pay yourself), you can begin by simply using the hourly rate you make on your present (or last) day job. But remember to take into account the cost of health benefits, disability, pension/retirement, vacations, sick days, etc. These can easily equal 30–50 percent of your wage. If you haven't included them in your overhead costs mentioned earlier, add them here. Then, combine the new labor figure with your hourly overhead figure to get shop rate.

"Generally, you're safe if you're in the range of other skilled trades—about $25 to $45 per hour."

What makes prices vary

Shop rates vary considerably, and not always how you'd expect. Terry Sawyer, a Kentucky craftsman, builds authentic "new" log cabins with salvaged material from old ones. He charges a mere $15 an hour. Some top woodturners or carvers may ask $100 an hour or more. Generally, you're safe if you're in the range of other skilled trades—about $25 to $45.

Remember that formulas can oversimplify. You're spreading overhead evenly over everything that you make. But some items take more hours or equipment to make, find supplies for, or market. You may need to adjust prices to compensate.

A bigger problem with formulas is that they don't tell you what people are actually willing to pay. That's why a formula doesn't completely account for the price difference between Wes Riggs' Windsor chair and David Kiernan's art chair. Although most cabinet shops use formulas, woodturners, woodcarvers, or small-craft makers often base prices on a subjective sense of what pieces will sell for.

No matter what you make, researching the market is essential. Check craft shows and retailers, or call other woodworkers to check prices (keep in mind that retail prices often reflect a 100% markup). Also account for differences in quality.

Besides quality, three more subjective, market-driven factors determine the prices woodworkers can command:

- *Originality.* The more unique the work, the higher the price.
- *Reputation.* Once you have a following, you can raise prices.
- *Salesmanship and marketing.* Some consumers will pay top dollar for quality and originality; if you can find those buyers, you'll make more.

Finally, here's the most important advice on pricing: Don't sell yourself short. Woodworkers selling for the first time tend to underprice. You may be better than you think.

Written by Jack Neff, a Batavia, Ohio, business writer and author of *Make Your Woodworking Pay for Itself.*

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DOUBLE-DUTY DUO

Barrel makers got extra work from these tools

Tools that purport to perform more than one task frequently do none of them particularly well. But sometimes a combination works so well it seems a natural. The ordinary claw hammer falls into that category, along with these less familiar tools.

Coopers relied on a number of unique tools when building staved wooden barrels. Most of those tools handled one specific chore. But the cooper's adze, *left* in the photo, and the bung borer, *right*, each combined two functions.

An adze with drive

An adze is essentially an axe with its blade at a right angle to the handle. Used for anything from heavy stock removal to fitting and shaping, the adze, in one form or another, was standard equipment in almost every woodworking trade in the 1800s.

The cooper's adze evolved into a short-handled implement with a narrow, curved blade. But its most distinctive feature is the extended poll forming a square or rectangular hammer head.

Coopers used this adze to cut a bevel (called the *chime*) on the inside top face of the assembled staves. The deeply curved blade and short handle allowed the cooper to swing the adze inside the mouth of the barrel. For ease of sharpening, the handle could be removed simply by undoing a nut at the end.

The tool also served as a hammer. Though coopers used heavier hammers for riveting hoops and driving them on, the adze's hammer head came in handy for many tasks where a heavier hammer would have been overkill, particularly in repairing barrels.

A whole hole with one tool

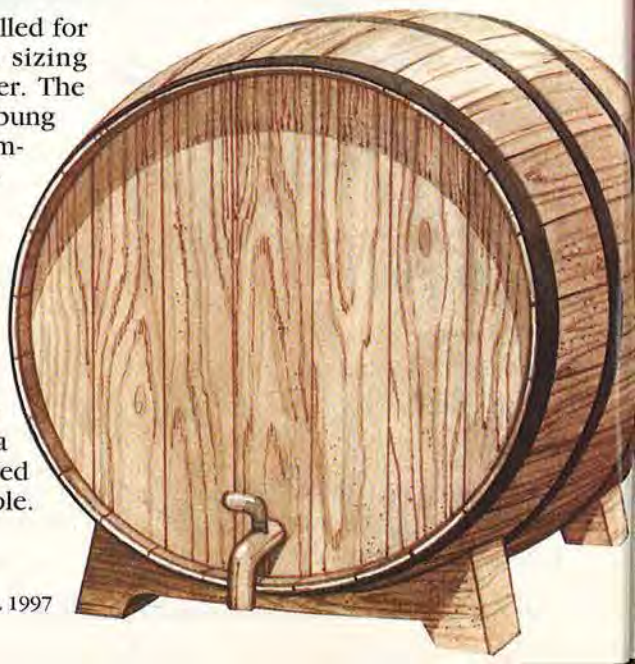
Wooden barrels that would contain liquids (called tight barrels) usually had two tapered holes for filling and emptying—a bunghole in the side near the middle of the barrel and a tap hole through one head (end) near the rim.

Boring these ordinarily called for drilling pilot holes, then sizing them with a tapered reamer. The American-style cylindrical bung borer shown here streamlined the task by performing both steps.

After drilling through the stave or head with the auger bit at the tip, the cooper would simply push the tool's body on into the hole. As he contined to turn the tool, the cutting edges formed by a slot in the side of the tapered hollow body reamed the hole.

Cooper's tools weren't commonplace, but many have survived because the skilled tradesmen who used them usually took good care of them. They're not highly sought after, so moderate prices prevail. One dealer recently listed a bung borer like the one shown for $35 and cooper's adzes at $65 and $75. And we found a bung borer and adze in a flea-market booth, priced at $85 for both.

Tools from the collection of Paul Gorham, Indianola, Iowa
Photograph: John Hetherington
Written by Larry Johnston



BOSCH

1003VSR	3/8" VSR DRILL W/KEYLESS CHUCK	75
1194VSR	1/2" VSR, 2 STAGE HAMMER DRILL	152
1275DVS	3" X 24" VS DUSTLESS BELT SANDER	208
1276DVS	4" X 24" VS DUSTLESS BELT SANDER	228
1370DEVS	6" VS DSTLS RNDM ORB SNDR	244
1584VS	CLIC BARREL HANDLE JIG SAW, VS	138
1584VSW	1584VS JIG SAW W/CASE & 10 BLADES	159
1584DVS	BARREL HANDLE JIG SAW, DUSTLS	177
1587VS	TOP HANDLE JIG SAW, VARSP	138
1587VSW	1587VS JIG SAW W/CASE & 10 BLADES	159
1587DVS	TOP HANDLE JIG SAW, DUSTLESS	177
1604A	1 3/4 HP ROUTER	148
1608	LAMINATE TRIMMER	97
1609AKX	DELUXE INSTALLERS KIT W/4 BASES	234
1613EVS	2 HP VAR SP PLUNGE ROUTER	198
1613EVSK	1613EVS W/RA1051 DELUXE EDGE GUIDE	208
1613EVSKX	1613EVS, EDGE GUIDE, TEMP GUIDE KIT	229
3054VSRK	12V CORDLESS KIT W/2 BAT, CASE	177
3107DVS	5" RANDOM ORBIT SANDER, VS	95
3107DVSK	5" RANDOM ORBIT SANDER WITH CASE	114
3725DVS	5" DUSTLESS VS RANDOM ORBIT SANDER	143
3727DVS	6" DUSTLESS VS RANDOM ORBIT SANDER	148
3272AK	3 1/4" PLANER KIT WITH CASE	119
3296K	3 1/4" PLANER KIT WITH CASE	174
3310K	12V CRDLS T HANDLE W/2 BAT, CS & CHRG	175
3610K	14.4V CDLS DRILL KIT W/2 BATT	188
3915	10" SLIDE COMPOUND MITER SAW	598

BIESEMEYER

78-900	50" COMMERCIAL FENCE SYSTEM	319
78-907	30" COMMERCIAL FENCE SYSTEM	289
78-930	28" HOME SHOP FENCE SYSTEM	249
78-931	40" HOME SHOP FENCE SYSTEM	279
78-935	52" HOME SHOP FENCE SYSTEM	279
78-985	T-SQUARE CUT OFF SAW STOP	74.95
78-961	ANTI KICKBACK SNAP IN SPREADER-UNISAW	89.95
78-962	SAME AS ABOVE FOR POWERMATIC 66	89.95

SKIL

HD77	7 1/4" WORM DRIVE CIRCULAR SAW	159
HD77M	7 1/4" MAGNESIUM WORM DRIVE SAW	172
HD1605-02	BISCUIT JOINER	134
HD2745-04	12V CDLS DRILL KIT W/2 BATTERIES & CASE	128
3400	10" TABLE SAW W/CARB BLADE & STAND	198

BESSEY

		BOX OF 5 (EACH)	PRICE (EACH)
K3.512	12" K BODY CLAMP	28.95	30.95
K3.524	24" K BODY CLAMP	31.95	34.95
K3.531	31" K BODY CLAMP	34.95	36.95
K3.540	40" K BODY CLAMP	38.95	41.95
KP BLOCKS	FOR USE WITH K BODY CLAMPS		24.95
TGJ2.506	6" BAR CLAMP, 2 1/2" THROAT		8.95
TGJ2.512	12" BAR CLAMP, 2 1/2" THROAT		9.95
TGJ2.518	18" BAR CLAMP, 2 1/2" THROAT		10.95
TGJ2.524	24" BAR CLAMP, 2 1/2" THROAT		11.95
TGJ2.530	30" BAR CLAMP, 2 1/2" THROAT		13.45
TGJ2.536	36" BAR CLAMP, 2 1/2" THROAT		14.95
VAS23	VARI ANGLE STRAP CLAMP		34.95
WS3	ANGLE CLAMP		20.95

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636 OSCILLATING TRIANGULAR SANDER

INCLUDES CASE & PAPER ASSORTMENT

Jorgensen

ITEM	JAW LENGTH	OPEN CAP	OUR PRICE EACH	BOX OF 6
ADJUSTABLE HANDSCREWS				
#0	8"	4 1/2"	11.95	65.95
#1	10"	6"	12.50	70.95
#2	12"	8 1/2"	14.50	82.95
STYLE 37 2 1/2" THROAT 1/4" x 3/4"				
3706		6"	6.00	32.50
3712		12"	6.50	36.00
3718		18"	7.50	40.75
3724		24"	7.95	43.50
3730		30"	8.80	47.75
3736		36"	9.95	53.95

PONY CLAMP FIXTURES

#50 ..... 3/4" BLACK PIPE CLAMPS 8.10
BOX OF 12 $91.95

#52 ..... 1/2" BLACK PIPE CLAMPS 6.95
BOX OF 12 $74.75

PONY SPRING CLAMPS - 3201HT 1" .. 1.35
3202HT 2" .... 1.89 3203HT 3" 3.99

Milwaukee

0408-1	12V KYLS CDLS DRILL KIT W/2 BAT, CS	172
6490	10" MITER SAW	264
6494	10" CMPND MITER SAW W/CARB BLADE	315
6496	*NEW* 10" SLIDE COMPOUND MITER SAW	569
6497	10" SLIDE COMPOUND SAW W/ACCS	649
6517	SAWZALL PLUS QUIK LOK CORD	155

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Model 9444 - Profile Sander Kit OUR PRICE $108.00

BN125	18 GA. BRADNAILER KIT 5/8" - 1 1/4"	89
BN200	18 GA. BRAD NAILER KIT 3/4" - 2"	139
DA250	15 GA. ANGLE FINISH NAILER KIT 1 1/4" - 2 1/2"	219
DA250A	15 GA. ANGLE FINISH NAILER KIT 1 1/4" - 2 1/2"	248
FN200	16 GA. FINISH NAILER KIT 3/4" - 2"	162
FN250	16 GA. FINISH NAILER KIT 1" - 2 1/2"	218
FR350	FRAMING NAILER W/CASE 3 1/2" CAPACITY	308
NS100	NARROW CROWN STAPLER KIT 1/2" - 1"	92
NS150	NARROW CROWN STAPLER KIT 1/2" - 1 1/2"	158
100	7/8 HP ROUTER	107
314	4 1/2" TRIM SAW	152
330	SPEED BLOCK FINISHING SANDER	62
332	QUIKSAND 5" RNDM ORB W/STIKIT PAD	72
332K	332 W/CASE & 100 SHEETS PAPER	99
333	QUIKSAND W/HOOK & LOOP, DUSTLS	76
333K	333 W/CASE & 50 SHEETS PAPER	106
334	QUIKSAND W/STIKIT, DUSTLESS	76
334K	334 W/CASE & 100 SHEETS PAPER	106
340	1/4 SHT FIN SANDER W/DUST P/U	49
347K	7 1/4" FRAMERS SAW, 15 AMP WITH CASE	128
352	3" X 21" BELT SANDER W/DUST BAG	168
352VS	3" X 21" BELT SANDER DUSTLESS W/VAR SP	164
360	3" X 24" BELT SANDER W/DUST BAG	212
361	3" X 24" BELT SANDER	203
362	4" X 24" BELT SANDER W/DUST BAG	218
363	4" X 24" BELT SANDER	213
505	1/2 SHT FIN SANDER	126
511	CYLINDRICAL LOCK INSTALLATION KIT	148
550	NEW POCKET CUTTER	168
552	PRODUCTION POCKET CUTTER	569
556	BISC JOINER W/CASE & TILT FENCE	132
556K	SAME AS ABOVE W/1000 BISCUITS	152
690	1 1/2 HP ROUTER	140
691	1 1/2 HP "D" HANDLE ROUTER	158
691K	691 W/CASE, EDGE GD & TEMP GD KIT	209
90690	SPECIAL EDITION 1 1/2 HP ROUTER W/CASE	158
693	PLUNGE BASE ROUTER, 1 1/2 HP	178
697	ROUTER TABLE WITH 1 1/2 H P MOTOR	228
698	ROUTER TABLE ONLY	134
743K	7 1/4" FRAMERS SAW, LEFT SIDED WITH CASE	128
2620	3/8" VSR DRILL, 0-1200 RPM W/CHK	96
2621	3/8" VSR DRILL, 0-1200 RPM, KEYLESS	96
5008	DOVETAIL TEMPLATE	79
5009	MORTISE & TENON JIG	49
5116	OMNI JIG	268
6931	PLUNGE ROUTER BASE	78
7116	NEW 24" OMNIJIG	292
7310	LAMINATE TRIMMER, 5.6 AMP	97
7312	OFFSET LAMINATE TRIMMER	134
7335	5" RANDOM ORBIT SANDER	132
7336	6" RANDOM ORBIT SANDER	136
7335K	5" RANDOM ORB W/CASE, 73333 & PAPER	168
7336K	6" RANDOM ORB W/CASE, 73333 & PAPER	176
7499	CUTOUT TOOL	68
7518	3 1/4 HP FIXED BASE ROUTER-5 SPEED	274
7519	3 1/4 HP FIXED BASE ROUTER-1 SP	248
7536	2 1/2 HP FIXED BASE ROUTER	209
7537	2 1/2 HP FIXED BASE "D" HNDL RTR	224
7538	3 1/4 HP PLUNGE ROUTER-1 SPEED	248
7539	3 1/4 HP PLUNGE ROUTER-5 SPEED	274
7800	DRYWALL SANDER	326
7810	POWER TOOL TRIGGERED WET/DRY VAC	258
9118	PORTA PLANE KIT W/CASE, CRBD BLD	228
9125	3 1/4" PLANER WITH CASE	138
9341	1/4 SHEET FINISHING SANDER WITH CASE	58
9444	PROFILE SANDER KIT WITH ACCESSORIES	108
9647	TIGER CUB RECIP SAW KIT	129
9737	RECIP TIGER SAW, 9.6A, QUICK CHNG CHUCK	162
9830	9.6V CORDLESS KIT W/2 BATTERIES, CASE	148
9862	12V CORDLESS KIT W/2 BATTERIES, CASE	178
9872	14.4V CORDLESS DRILL KIT W/2 BATT. & CASE	208
97310	LAMNT TRIMMR KIT W/3 BASES & CS	168
97499	CUTOUT TOOL WITH BITS & CASE	88
97549	JIG SAW W/CASE & 3 BLADES	144

The International Tool Woodworkers Special

Model 906901K Includes 90690 commemorative router with case, 6931 plunge base, 42160 edge guide, 42000 template guide kit, 39993 routing pad, The World of Porter Cable Routers video, and a $5.00 coupon towards future Porter Cable accessory purchase **OUR PRICE $284.00**

HITACHI

C8FB	8 1/2" SLIDE COMPOUND MITER SAW	499
C10FC	10" COMPOUND MITER SAW	209
C10FS	NEW 10" SLIDE COMPOUND MITER SAW	738
M12V	3 HP VAR SPEED PLUNGE ROUTER	249
NR83A	FULL HEAD STRIP NAILER, 2 - 3 1/2 CAP	389
NV83A	COIL NAILER, 2 -3 1/4" CAPACITY	399
P20SB	3 1/4" PLANER	98
TR12	3 HP PLUNGE ROUTER	188

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13	6" X 89" EDGE SANDER	629
14	OSCILLATING SPINDLE SANDER	295
15	15" PLANER	1295
44	14" BAND SAW, 1 HP, 1 PHASE MOTOR	645
54	6" JOINTER WITH ENCLOSED STAND	545
60	8" LONG BED JOINTER	1695
64	1 1/2 HP TABLE SAW W/ACCU FENCE	745
64L	1 1/2 HP TABLE SAW W/50" ACCU FENCE	845
66	3 HP, 1 PH 10" T.A. SAW W/50" FENCE	1995
66	5 H P, 1 PH 10" T.A. SAW W/50" FENCE	2095
73	1 1 /2 HP DUST COLLECTOR	419
75	3 HP DUST COLLECTOR	675
83	COMBINATION BELT/DISC SANDER	445

AIRMARK

AT-220T	2 HP TWIN TANK COMPRESSOR	289
AT-230S	2 HP TUBE TANK COMPRESSOR	249

SENCO

SKS	NARROW CROWN STAPLER	274
SLP20	BRAD NAILER W/CASE 5/8"-1 5/8" CAP	278
SFN40	FINISH NAILER 1 1/4"-2 1/2" CAP	389

AIRY

0241NK	18 GAUGE BRAD NAILER 3/8"-1 9/16" WITH CASE & 5000 NAILS	96
0250NK	18 GAUGE BRAD NAILER 3/4"-2" W/CASE & 5000 NAILS	162
0350NK	15 & 16 GA. FINISH NAILER 3/4"-2" W/CASE & 5000 ASSORTED BRADS	192
0565T	ANGLE FINISH NAILER 1"-2 1/2"	203
0626NK	NARROW CROWN 1/4" STAPLER 1/2"-1" WITH CASE & 5000 STAPLES	103
0638P	3/4"-1 1/2" NARRW CRWN STPLR W/CS	179
8290	STICK NAILER 2 - 3 1/2" CAPACITY	314
EZ-1	SHOOTS 1/4", 3/8", 1/2" CRN STAPLES & BRADS, 5/8" CAP, W/CASE & 5000 ASSORTED FASTENERS	96
EZ-2	SHOOTS BOTH BRADS & STAPLES	149

OUR PRICES WILL NOT BE BEAT!

Makita

5007NBK	7 1/4" CIRC SAW W/CS & BLADE	125
6095DWE	9.6V CDLS DRILL KIT W/2 BATT	129
6095DWLE2	SAME AS ABOVE WITH FLASHLIGHT	139
6172DWE	7.2V CDLS DRILL KIT W/2 BATT	99
BO5001	5" RANDOM ORBIT SANDER	67
DA391DW	9.6V ANGLE DRILL KIT	178
LS1011	10" COMPOUND MITER	469
LS1211	12" COMPOUND MITER	798
N1900B	3 1/4" PLANER	134

DELTA

14-650	HOLLOW CHISEL MORTISER	249
22-540	12" BENCH TOP PLANER	378
23-710	NEW SHARPENING CENTER	169
28-185	BENCH TOP BAND SAW	168
31-460	4" BELT/6" DISC SANDER	132
31-695	6" BELT/9" DISC SANDER	348
34-182	TENONING JIG	82
37-070	*NEW* 6" VS BENCH JOINTER	258
40-540	16" VS SCROLL SAW	192

DEWALT

DW100	3/8" 4 AMP, VAR. SP. DRILL	66
DW321K	TOP HANDLE JIG SAW KIT	162
DW359K	7 1/4" CIRCULAR SAW W/CASE	129
DW411K	1/4 SHEET SANDER WITH CASE	54
DW420	5" RANDOM ORBIT SANDER, PSA	68
DW421	5" DSTLS RNDM ORB SANDER, VELCRO	74
DW422	5" ROS 2 AMP SANDER W/DUST COLLCT	79
DW423	5" VS DUSTLS RANDOM ORBIT SANDER	93
DW430	3" X 21" DUSTLESS BELT SANDER	169
DW431	3" X 21" DSTLS BELT SANDER VAR SP	183
DW441	6" RIGHT ANGLE ROS SANDER, DSTLS	128
DW443	6" ROS SANDER VAR SP, VELCRO	138
DW610	1 1/2 HP ROUTER, 9 AMP	147
DW615	1 1/4 HP PLUNGE ROUTER, VAR SP	163
DW621	2 HP VS DSTLS PLUNGE ROUTER	218
DW625	3 HP HVY DTY PLUNGE RTR, VAR SP	274
DW670	*NEW* LAMINATE TRIMMER WITH GUIDE	97
DW673K	7/8 HP LAMINATE TRIMMER KIT	198
DW675K	PLANER KIT, 7.2 AMP W/STEEL CASE	159
DW682K	BISCUIT JOINER KIT	199
DW705	12" MITER SAW W/CARB BLADE	358
DW936	18V CORDLESS SAW KIT	248
DW972K2	*NEW* 12V CRDLS KIT/W BATTERY & CS	188
DW972KS2	12V CDLS DRILL & CIRC SAW KIT	274
DW991K2	DW991K WITH TWO BATTERIES	224
DW991KS2	14.4V CDLS DRILL & CIRC SAW KIT	348
DW995K	18V 1/2" DRILL W/BATT, CHRGR & CS	238
DW995KS2	18V DRILL & SAW COMBO KIT	398

Panasonic

FREE 12V LANTERN!

EY6100EQKW 12V PREDATOR CORDLESS KIT W/KEYLESS CHUCK, 2 IRONMAN BATTERIES, 15 MIN. CHARGER & CASE, VSR 194

scmi

SC3	SLIDING TABLE PANEL SAW	3395
S45	18" BAND SAW	1595

CALL FOR PRICES ON OTHER SCMI MACHINERY

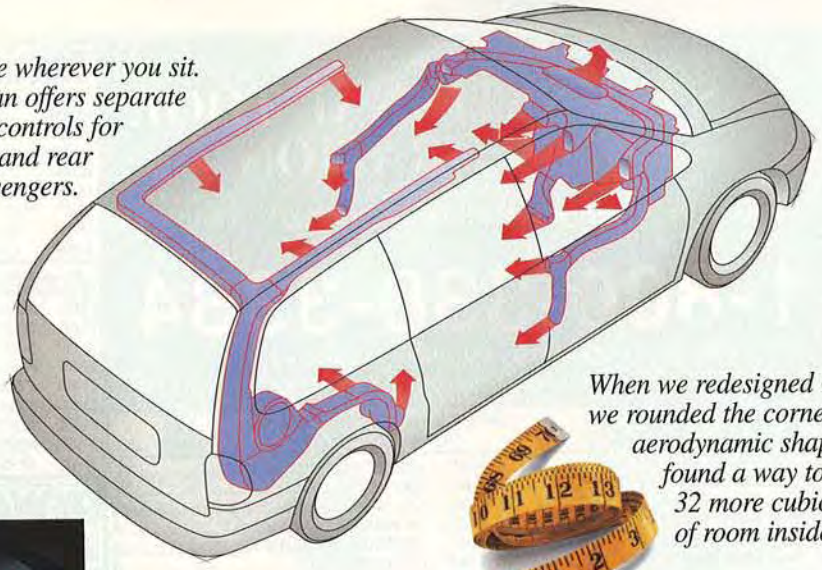
RYOBI

AP12	12" PORTABLE PLANER	388
DBJ50	DETAIL BISCUIT JOINTER	69
DC500K	DETAIL CARVER KIT	62
DS2000K	2 SP DETAIL SANDR W/CS & ACCYS	62
HT20VSK	MULTI ROTARY TOOL W/CS & ACCYS	55
ML618	18" WOOD MINI LATHE	214
OSS450	OSCILLATING SPINDLE SANDER	158
SC162VS	16" VS SCROLL SAW	164
WDS1600	WIDE DRUM SANDER	574

freud

TR215	8 1/2" COMPOUND SAW	348
JS100	BISCUIT JOINER	167
FT2000E	3 hp PLUNGE ROUTER	204
EB100	EDGE BANDING SYSTEM	214
F410	10" X 40T QUIET BLADE	48
F810	10" X 80T QUIET BLADE	73
LM72M010	10" X 24T FLAT TOP RIP BLADE	36
LU82M010	10"X 60T CROSSCUT/RIP BLADE	46
LU84M010	10" X 50T ATB COMBO BLADE	40
LU85M010	10" X 80 T ATB FOR MIRROR FINISH	58
LU87M010	10" X 24T RIP BLADE THIN KERF	42
LU88M010	10" X 60T CROSSCUT THIN KERF	45
LU89M010	10" X 72T TCH NON FERROUS METAL	57
LU92M010	10" X 80T TCH - BEST FOR LAMINTS	57
LU98M010	10" X 80 T TCH LAMINATES OR WOOD	67
SD308	8" SAFETY DADO WITH CASE	116
SD508	*NEW 8" SUPER DADO SET*	167
TK206	10" X 24T THIN KERF RIP BLADE	28
TK306	10" X 40T THIN KERF COMBO BLADE	32
TK406	10" X 60T THIN KERF CROSSCUT	36
TK806	10" X 80T THIN KERF CROSSCUT	47
TK906	10" X 50T THIN KERF COMBO	34

Get comfortable wherever you sit. Grand Caravan offers separate climate controls for front and rear passengers.



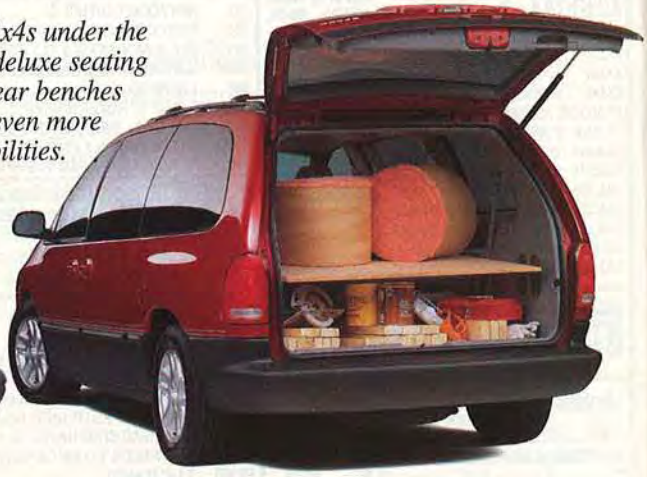
When we redesigned Caravan we rounded the corners for a more aerodynamic shape, and still found a way to get 32 more cubic feet of room inside.

We've made adjustments for everyone. The front passenger seat, for instance, adjusts a full 8".

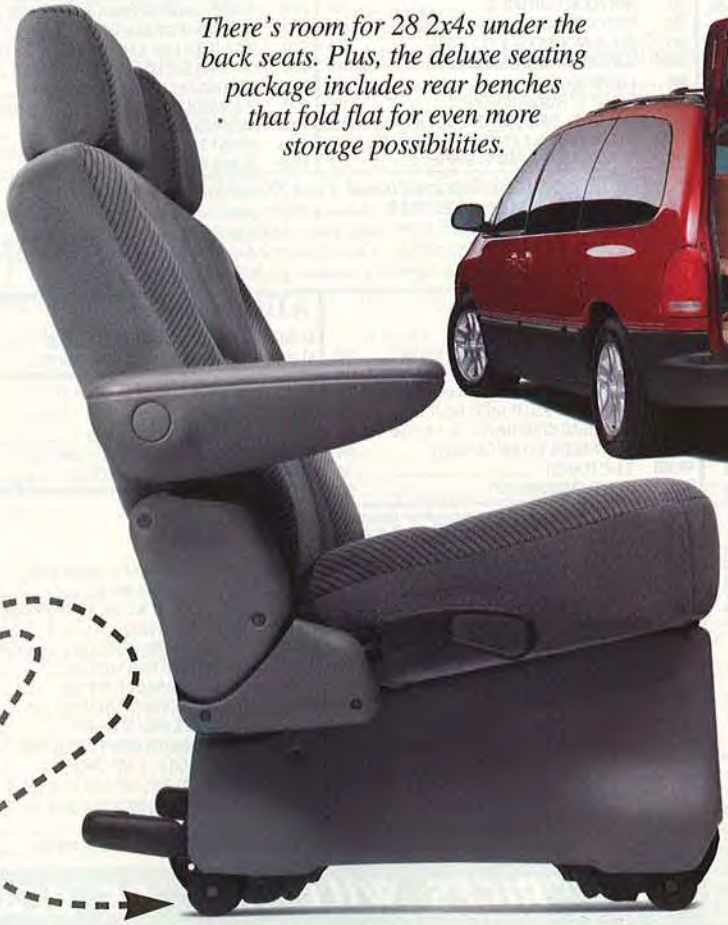
An optional locking storage drawer under the front passenger seat lets you keep valuables out of sight.

Feel free to rearr

There's room for 28 2x4s under the back seats. Plus, the deluxe seating package includes rear benches that fold flat for even more storage possibilities.

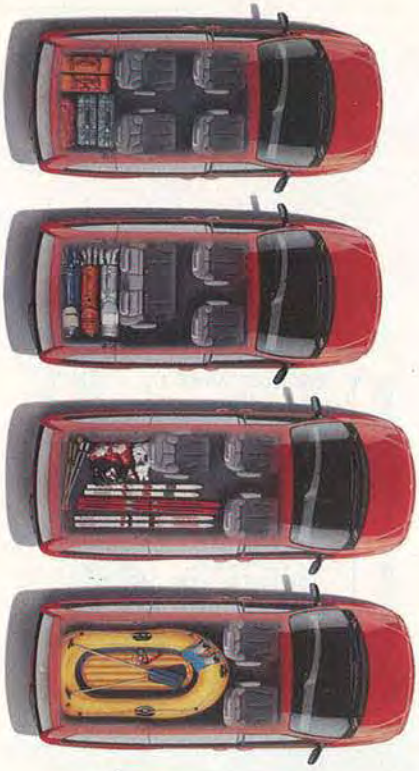


It's so easy to deploy the wheels on our rear benches, you can do it with one hand tied behind your back.



The wheels on our Easy Out Roller Seats™ pop down like landing gear.

Suit yourself ... seat yourself. Caravan comes in two sizes, to fit families of all sizes.



In our Deluxe Seating Package, the middle bench reclines 36° and the rear bench almost all the way back. And all seats are fine-tuned to minimize fatigue.

ange the furniture.

Our single buckle system makes our available integrated child safety seats more convenient for parents.

We've provided up to 14 places to set a cup of coffee, a can of pop, a juice box or even a Big Gulp®.

Caravan The New Dodge

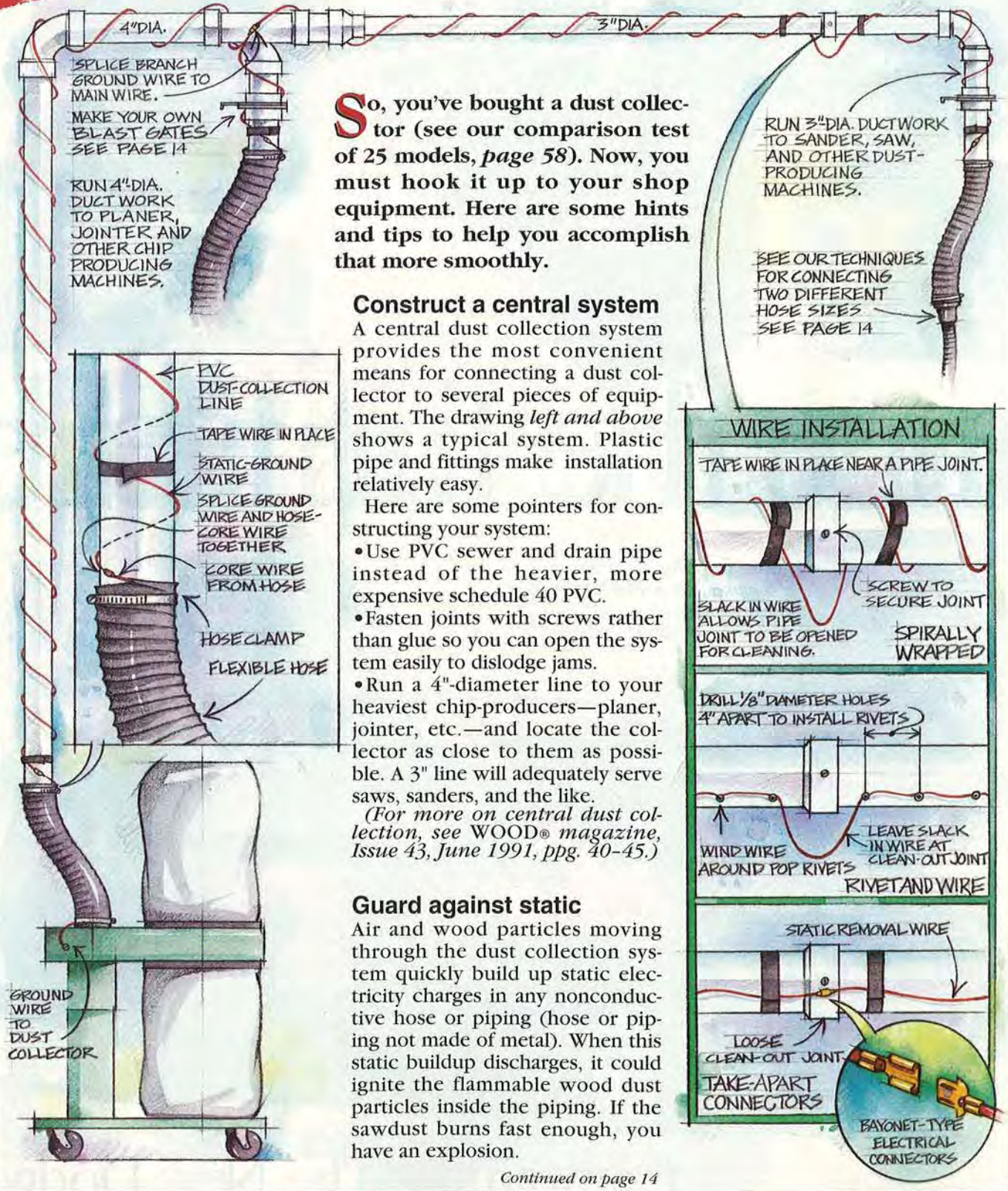
For still more information, call 1-800-4-A-DODGE or visit our Web site at http://www.4adodge.com

Big Gulp is a registered trademark of The Southland Corporation.

What woodworkers need to know

Dust Collection

How to set up your system


4"DIA.
3"DIA.
SPLICE BRANCH GROUND WIRE TO MAIN WIRE.
MAKE YOUR OWN BLAST GATES SEE PAGE 14
RUN 4"DIA. DUCTWORK TO PLANER, JOINTER AND OTHER CHIP PRODUCING MACHINES.
RUN 3"DIA. DUCTWORK TO SANDER, SAW, AND OTHER DUST-PRODUCING MACHINES.
SEE OUR TECHNIQUES FOR CONNECTING TWO DIFFERENT HOSE SIZES SEE PAGE 14
PVC DUST-COLLECTION LINE
TAPE WIRE IN PLACE
STATIC-GROUND WIRE
SPLICE GROUND WIRE AND HOSE-CORE WIRE TOGETHER
CORE WIRE FROM HOSE
HOSE CLAMP
FLEXIBLE HOSE
GROUND WIRE TO DUST COLLECTOR
WIRE INSTALLATION
TAPE WIRE IN PLACE NEAR A PIPE JOINT.
SCREW TO SECURE JOINT
SLACK IN WIRE ALLOWS PIPE JOINT TO BE OPENED FOR CLEANING.
SPIRALLY WRAPPED
DRILL 1/8" DIAMETER HOLES 4" APART TO INSTALL RIVETS
WIND WIRE AROUND POP RIVETS
LEAVE SLACK IN WIRE AT CLEAN-OUT JOINT
RIVET AND WIRE
STATIC REMOVAL WIRE
LOOSE CLEAN-OUT JOINT
TAKE-APART CONNECTORS
BAYONET-TYPE ELECTRICAL CONNECTORS

So, you've bought a dust collector (see our comparison test of 25 models, *page 58*). Now, you must hook it up to your shop equipment. Here are some hints and tips to help you accomplish that more smoothly.

Construct a central system

A central dust collection system provides the most convenient means for connecting a dust collector to several pieces of equipment. The drawing *left and above* shows a typical system. Plastic pipe and fittings make installation relatively easy.

Here are some pointers for constructing your system:

- Use PVC sewer and drain pipe instead of the heavier, more expensive schedule 40 PVC.
- Fasten joints with screws rather than glue so you can open the system easily to dislodge jams.
- Run a 4"-diameter line to your heaviest chip-producers—planer, jointer, etc.—and locate the collector as close to them as possible. A 3" line will adequately serve saws, sanders, and the like.

(For more on central dust collection, see WOOD® *magazine, Issue 43, June 1991, ppg. 40-45.)*

Guard against static

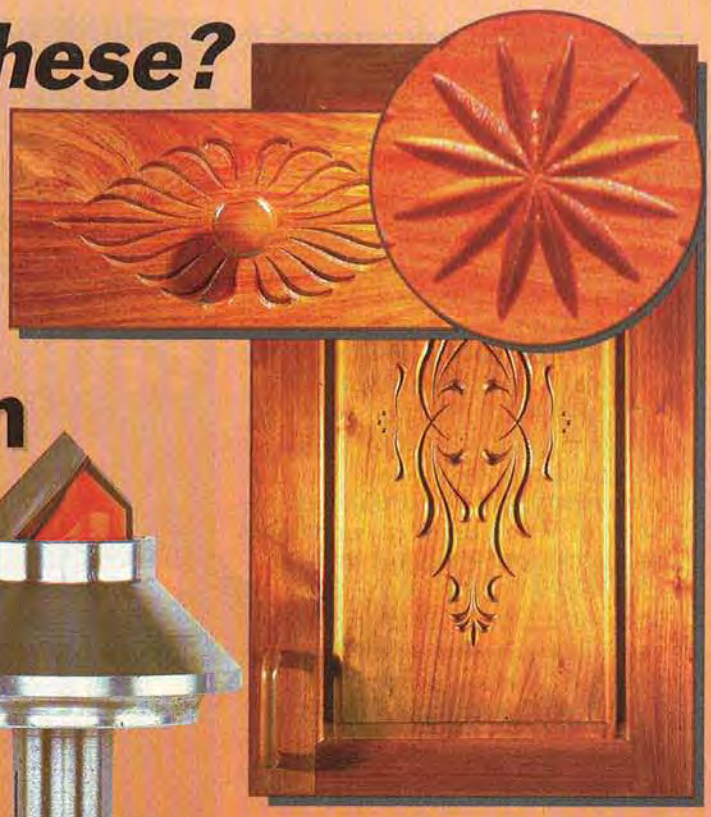
Air and wood particles moving through the dust collection system quickly build up static electricity charges in any nonconductive hose or piping (hose or piping not made of metal). When this static buildup discharges, it could ignite the flammable wood dust particles inside the piping. If the sawdust burns fast enough, you have an explosion.

Continued on page 14

Can you carve these?

Sure you can, with CMT TOOLS' exclusive

3D Router Carver™ System



What is the 3D Router Carver™ System?

The 3D Router Carver System is a unique patented method of producing intricate carvings quickly, economically and with complete repeatability. With the Carver Bit, Carver Templates and your 1/2" collet plunge router you can carve any flat wooden surface with designs that rival the work of a professional carver. In fact, the 3D Carver System's speed, accuracy and economy make it equally attractive to the professional or the serious amateur. Besides your router, the system requires three key elements:

1) The 3D Carver Bit: A 1/2" shank, carbide tipped V-Groove Bit is enclosed in a 45º guide bushing. A threaded shaft within the bit's shank allows precise depth adjustment of the tip of the V-Groove bit. ***Bit Specifications: Shank: 1/2" Cut diameter: 3/4" Cut Angle: 45º Cut depth: 5/8" Guide bushing diam.: 1-7/8"***

2) Template Holding Frames: Clamped or tacked to your workpiece, these frames hold the 3D Templates securely in place.

3) Carver Templates: A total of 46 templates produce a host of designs for cabinet doors, panel doors, rails, corners, drawer fronts and many other applications.

How does the system work?

The bit is installed in the router (1/2" collet only) with the plunge mechanism unlocked so that the router can move up and down as you route. The 45º bushing follows the slots in the template. As the slot gets wider, the router moves downward, so the v-groove gets wider. As the slot narrows, the router moves up and the groove gets narrower. That's it!

Where can I learn more?

Order our new 3D Carver Pattern set (at right), which includes full-size drawings of all 46 designs packed in a 3-ring binder. Or order the 3D Carver video (below), a step-by-step demonstration of all of the system's capabilities.

3DC-999
3D Carver Video
List: $13.00 SALE: $10.00

NEW!

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Includes 42 pages of accurate, full-size drawings packed in a sturdy 3-ring binder

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The 3D Carver System™ & Templates are protected by U.S. patent #5,146,965 & international patents.
*The color orange on router bits is a registered trademark of CMT Tools™

What woodworkers need to know

Dust Collection

Continued from page 12

A static ground for nonconductive ductwork can prevent static-charge buildup and potential disaster. To install one, simply run a wire along or around the pipe, as shown in the illustrations *previous page*. Insulated or uninsulated 18- or 20-gauge copper wire, either solid or stranded, works fine.

At pipe joints, leave slack in the wire or install bayonet connectors (Radio Shack has them) to facilitate opening the system in case of a clog. Run a ground wire along each branch, and splice each into the main wire.

Connect the ground wire's conductor to the dust collector's metal frame or housing. The other end should extend to the outlet port on the tool, but it doesn't need to connect to anything, except to keep it in place. (Think of the wire as an antenna rather than as a conductor in a circuit.)

The coiled wire core in some flexible plastic tubing allows easy grounding. Simply strip the plastic away from a few inches of the wire core, then connect the wire to your system ground, as shown in the illustration *previous page*.

Control the flow

For maximum efficiency in a branched system, shut off the flow from all ports except the one in use. To do that, install blast gates, like the one shown *right*.

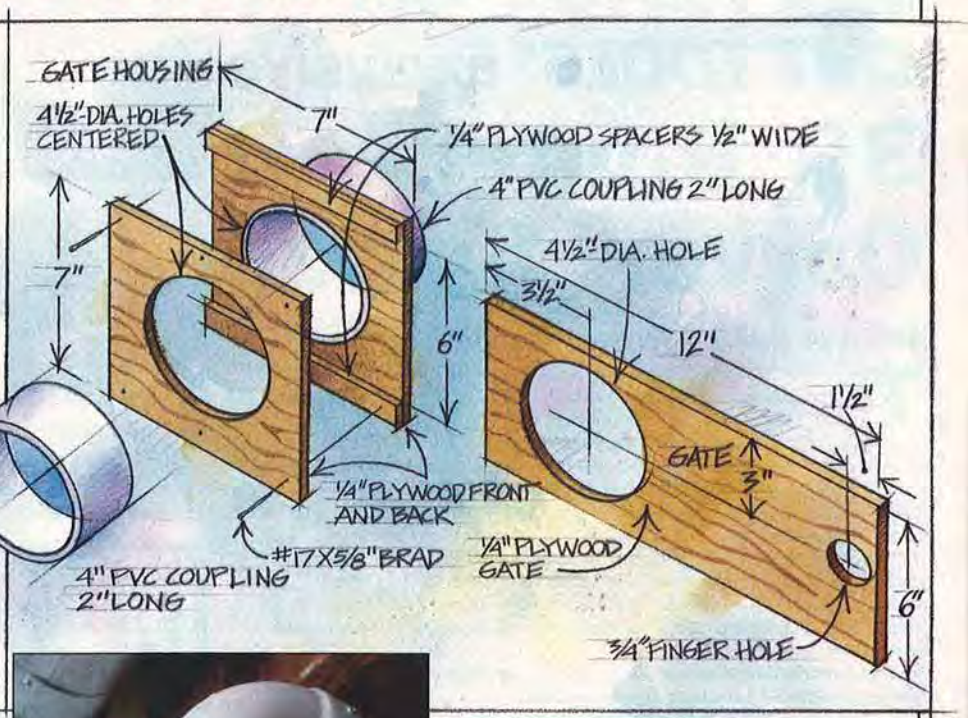
You can buy metal or plastic blast gates for various pipe sizes from a number of woodworking-equipment dealers. Or, refer to the drawing *top right* to build a wooden blast gate.

The connectors shown are made from a PVC pipe coupling cut in half and epoxy-glued into place. You can alter the dimensions and couplings shown to fit different sizes or types of pipe.

Making ends meet

To mate the 3" or 4" system to most of your tools, you'll need hoses and adapters. Here are two methods for joining a big hose to a smaller hose or connector:

Coffee can connector. Cut both ends out of a 12-ounce coffee can, like the one shown in the photo *above right*. Slide it into the end of a 4" hose, and clamp it. Then, cut a hole in the coffee can's plastic lid to fit the smaller connector. Snap the lid onto the can, and plug in the smaller connector. Seal the joint between the connector and the plastic lid with silicone sealer or tub and tile caulk, if you wish. For a blast gate, cap the can with an uncut plastic lid.



A blast gate, *above*, lets you shut off the flow to an unused port. Join hoses of different sizes with an empty can, *right*.

Wooden doughnut adapter. Make a wooden ring as shown in the blast gate photo from ¾" scrapwood. To make one, first lay out a circle the same size as the outside diameter of the small hose or connector and another concentric one that matches the inside diameter of the larger connector.

Then, bore the smaller hole with a circle cutter, holesaw, or similar tool. Bandsaw or scrollsaw around the larger circle to complete the doughnut. Install the adapter ring into the large port, and plug the small connector into it. Glue or caulk the joints, if you desire.

Illustrations: Brian Jensen

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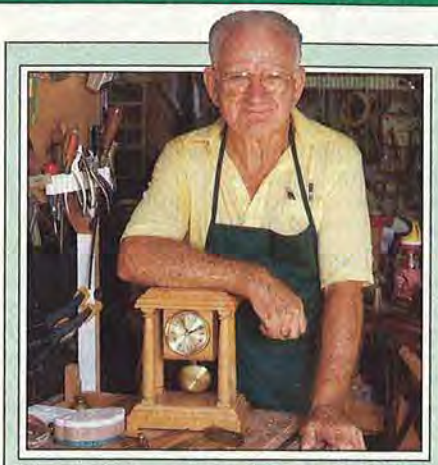

Wendell Fox shows off some of the *WOOD*® magazine projects he's built.

Corian clocks, boxes, and cheeseboards comprise just a few of the *WOOD* magazine projects that longtime reader Wendell Fox has built. After careers as a locksmith and insurance salesman, our Top Shop Tip winner has returned to working with his hands in his retirement.

Many of Wendell's scrollsawn projects have tiny inside waste cutouts. But, pinned scrollsaw blades often don't fit through the tiny start holes for these cutouts. This situation brought out the inventor in Wendell.

To become a prizewinner like Wendell, tell us how you solved a particular woodworking problem. We pay $40 for all tips published. If yours is selected as the Top Shop Tip, you'll win a tool prize valued at $250 or more and be featured in this column. Send a letter, including your daytime phone number, with a photo or drawing of your idea, to:

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We try to publish original shop tips, so please send your idea only to *WOOD* magazine.

Kerry Gibson

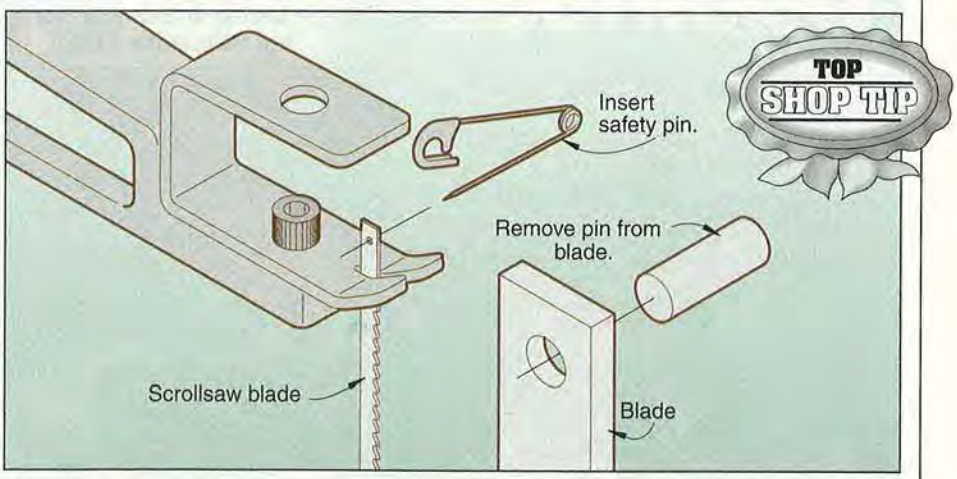
GENERAL-INTEREST EDITOR

Pop out pins to end blade-change hassles

For submitting the Top Shop Tip for this issue, Wendell receives a set of four Ryobi detail power tools—a sander, a carver, a biscuit joiner, and a Multi-tool kit.

To end the frustration of trying to thread pin-end scrollsaw blades through small starter holes, I knock out the factory-set pins and insert my own removable pin. To pop out the factory-set pin without damaging the blade, I first drill a 1/16" hole in a piece of heavy-gauge steel. Then I place the blade flat on the steel with the pin centered over the hole, and tap the pin through the blade with a hammer and punch. A safety pin, as shown *below*, secures the blade in the upper blade holder, and makes rethreading the blade a snap. I keep a few spares handy in case I happen to drop the pin.

—Wendell Fox, Debary, Fla.

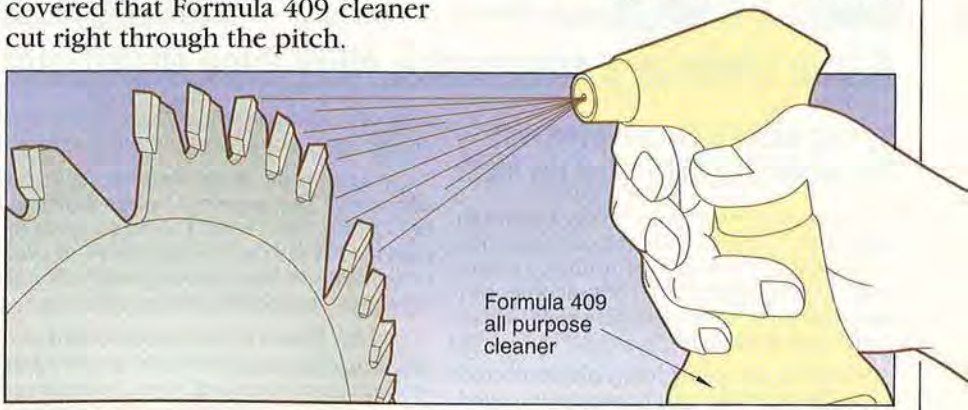


Strike out pitch with Formula 409

When my saw blades and router bits got gummed up, I thought about ordering some of the special pitch remover I'd seen advertised. But, since I needed to use a couple of bits right away, I decided to give some household cleaners I had on hand a try. I discovered that Formula 409 cleaner cut right through the pitch.

I let particularly tough spots soak, then scrub them with an old toothbrush. When my current spray bottle of Formula 409 runs dry, an inexpensive refill will be waiting for me at the nearest grocery store.

—Brian Schaible, Loveland, Colo.



Continued on page 19

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12"X30TX1"	$162	$119	$107	$ 95
10"X40TX1/8" or 3/32"	$156	$119	$107	$ 95
30T 1/8" or 3/32"	$135	$ 99	$ 89	$ 79
9"X40T	$146	$109	$ 98	$ 87
30T	$125	$ 99	$ 89	$ 79
*8-1/4"X40TX 3/32"	$136	$ 99	$ 89	$ 79
8"X40T 3/32"	$136	$ 99	$ 89	$ 79
30T	$115	$ 89	$ 80	$ 71
7-1/4"X30T 3/32"	$112	$ 69	$ 62	$ 55
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Fine Woodworking Magazine test Oct. 96 page 43

After installing your blade and 5 in. stiffener the vibration in my saw went down another 20%. I ran several pieces of hardwood through the saw, both crosscut and ripping, and was amazed at the smoothness. It was like cutting butter, maybe smoother. I have never had a saw blade that cut this smooth.

Rick Price

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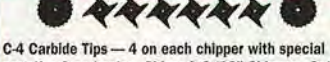

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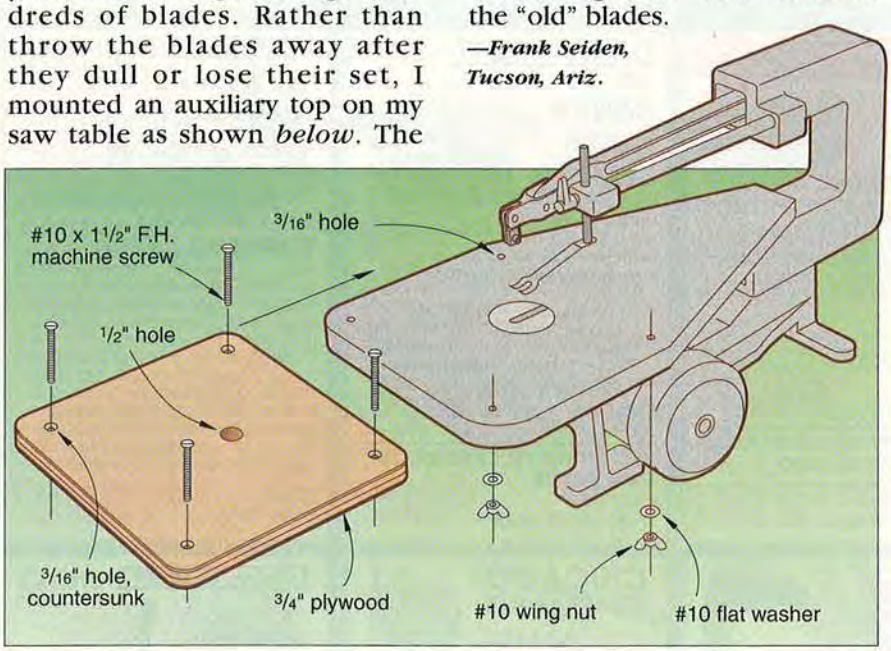
Continued from page 16

Built-up table top doubles scrollsaw blade life

I do a lot of scrollsaw work in a year's time and go through hundreds of blades. Rather than throw the blades away after they dull or lose their set, I mounted an auxiliary top on my saw table as shown *below*. The top raises the workpiece up so I'm sawing with "new" teeth on the "old" blades.

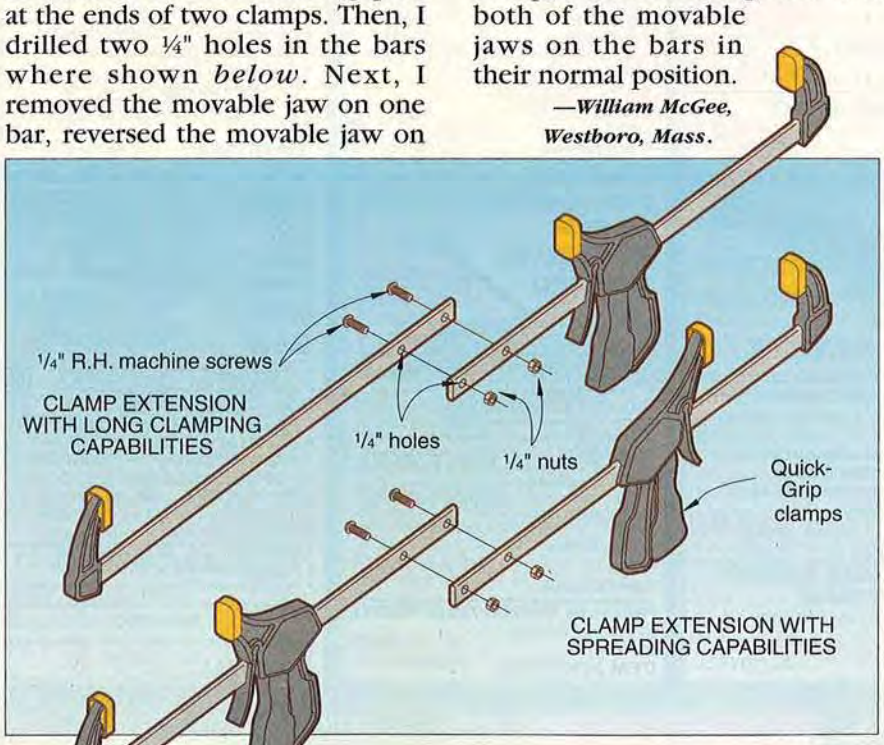
—Frank Seiden, Tucson, Ariz.



Bolt clamps together for extra-reach capacity

When need arose for some extra-long clamps, I developed this trick for increasing the capacity of my Quick-Grip Bar Clamps. First, I hammered out the retaining pins at the ends of two clamps. Then, I drilled two ¼" holes in the bars where shown *below*. Next, I removed the movable jaw on one bar, reversed the movable jaw on the other bar, and screwed the bars together with ¼" machine screws and nuts. To turn this arrangement into a spreader clamp, I bolt them together with both of the movable jaws on the bars in their normal position.

—William McGee, Westboro, Mass.



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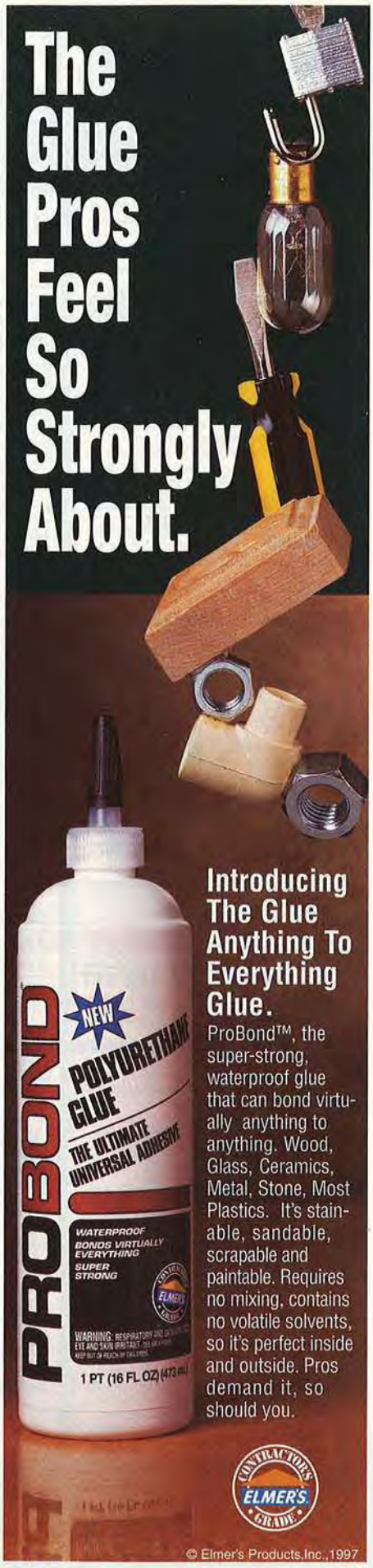
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ProBond™, the super-strong, waterproof glue that can bond virtually anything to anything. Wood, Glass, Ceramics, Metal, Stone, Most Plastics. It's stainable, sandable, scrapable and paintable. Requires no mixing, contains no volatile solvents, so it's perfect inside and outside. Pros demand it, so should you.
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16" SCROLL SAW

- Precision milled 14-1/2" x 8" table tilts 0° to 45°
- Uses pin end blades, 5-1/2" long
- Heavy duty cast iron frame and base reduces vibration • 7/8" blade stroke
- 1/8 HP, 110V, .83 amps
- 1750 SPM blade speed

ITEM 34618-0SAA **$59.99**

FOOT SWITCH WITH GUARD

Ready to use. Steel housing and 8 ft. cord.

ITEM 00495-6SAA **$9.99**

DRILL MASTER

SAVE UP TO 40% FROM OUR FALL BOOK

115 PC. TITANIUM NITRIDE COATED DRILL BIT SET

These titanium nitride coated high speed steel bits last up to six times longer than standard bits. Cool turning titanium bits are a must for metal workers. All bits can be resharpened. Straight shanks.

Includes: 29 fractional sizes 1/16" thru 1/2"; 26 letter sizes A thru Z; 60 numbered sizes 1 thru 60; Heavy duty metal drill index

ITEM 01611-1SAA **$49.99**

115 PC. M-2 HIGH SPEED STEEL DRILL BIT SET W/INDEX

- Same sizes as above
- M-2 high speed steel

ITEM 00528-1SAA **$29.99**

CENTRAL MACHINERY

10", 2 HP, BENCH TABLE SAW

Die cast aluminum table 25-3/4" x 16", has adjustable 17-7/8" x 2" rip fence and inch/metric scale for precise cutting.

- Maximum depth of cut at 90°: 3-1/8"; at 45°: 2-1/2"
- Blade capacity: 10" with 5/8" arbor
- Miter gauge adjusts 0° - 60° left and right
- Motor: 2 HP, 115V, 60 Hz, 10 amp, 4500 RPM • Blade sold separately, below
- Shipping weight: 36 lbs.

ITEM 35715-2SAA **$79.99**

10" 40 TOOTH CARBIDE TIP SAW BLADE

- 5/8" arbor

ITEM 00529-4SAA **$9.99**

CENTRAL MACHINERY

SAVE $20 FROM OUR BUYER'S GUIDE

12" x 37" WOOD TURNING LATHE

Index pin contains 36 - 10° spacings for accurate fluting and marking on workpieces. 4" face plate, center assembly tail stock, spur assembly head stock and 6" and 12" tool rests. (Base sold separately).

Distance between centers: 37"; Swing over bed: 12"; Spindle speeds: 575, 980, 1560, 2520 and 3580 RPM; Motor: 1/2 HP, 1725 RPM, 115V, 60 Hz AC, swing mounted to headstock; Drive spindle: No. 1 Morse taper plus 3/4-16 threaded; Tailstock: No. 1 Morse taper; 2-3/8" ram travel; Ship. wt.: 80 lbs.

ITEM 06841-0SAA **$139.99**

CENTRAL MACHINERY

SAVE OVER 30% FROM OUR FALL '96 CATALOG

6" INDUSTRIAL RABBETING JOINTER INCLUDES STAND

- Infeed table size: 22-1/2"
- Outfeed table size: 19-1/2"
- Motor: 1 HP, 110V, 4 amp, 4900 to 5900 RPM cutterhead speed
- Maximum depth of cut: 3/8"

ITEM 30289-5SAA **$199.99**

REPLACEMENT BLADE SET

ITEM 33271-1SAA **$9.99**

CHICAGO Electric Power Tools

13.2V, 3/8" CORDLESS DRILL KIT WITH KEYLESS CHUCK

- Indicator on drill body notifies operator of low battery charge • 6 torque settings
- Includes 6 pc. drill bit set, 6 pc. screwdriver bit set, magnetic extension bit, charger, battery, keyless chuck, & carrying case
- Variable speed, rev.; 0 to 600 RPM

ITEM 33165-2SAA **$49.99**

13.2V BATTERY

ITEM 33214-3SAA **$24.99**

21 PC. DRILL BIT SET

- 1/16" to 3/8" by 64ths

ITEM 33417-4SAA **$8.99**

CHICAGO Electric Power Tools

SAVE 20% FROM OUR FALL '96 BOOK

TRIM ROUTER

Now you can tackle those jobs that were too fine or exacting for a standard router. This compact router weighs only 4 lbs. for easy operation. Includes a straight and adjusting conductor to assist in trimming and engraving in both straight and circular patterns.

- 1/4" collet
- 30,000 RPM no load speed
- 110V, 3-1/4 maximum amp draw
- 8-1/2" overall length
- 4 lbs. tool weight

ITEM 33833-3SAA **$39.99**

CENTRAL MACHINERY

GREAT FOR ODD SIZED SHAPES

1" BELT/ 5" DISC SANDER

Remove the belt back plate and sand all types of curves and odd shapes. With the back plate in place, you can apply pressure for faster stock removal.

- Motor: 1/3 HP, 2.4 amp, 60 Hz, 110V, 3450 RPM • Table: 5" x 5", tilts to 45°
- Belt length: 30", 3350 FPM belt speed
- Dust collection for disc sander
- Shipping weight: 19 lbs.

~~$59.99~~ **$49.99**

ITEM 34951-1SAA

DELTA®

LIMITED QUANTITIES

Delta 36-510

10" BENCH SAW

Big saw capacity in a portable unit. Easy and safe to use with up-front controls and removable on off switch. Front and rear locking rip fence and miter gauge maintain full sized accuracy.

- Motor: 13 amps, 115V, 4700 RPM
- 5/8" arbor • Table: 16" x 26"
- Capacity: 3" max. depth, 2-1/2" max. depth at 45°
- Dimensions: 15" x 26" x 19"
- 40 lbs. tool weight

ITEM 35734-4SAA **$109.99**

CHICAGO Electric Power Tools

TRIANGLE DETAIL SANDER

Use 3-3/4" triangle pads to reach into corners conventional sanders can't.

- 110V, 1.2 amps
- 10,000 OPM
- Hook and loop sandpaper holder
- Includes dust collection bag
- 5 pc. sanding assortment 40, 80, 120, 200, and 240 grits

ITEM 35838-1SAA **$19.99**

5 PC. TRIANGLE SANDING PAD ASSORTMENT

- 40, 80, 120, 200, and 240 grits

ITEM 36082-0SAA **$3.99**

2 HP, 1200 PSI, 1.6 GPM PRESSURE WASHER

ELEKTRA

LIMITED QUANTITIES

Starts when you pull the trigger, stops when you let go. Exclusive "Power-On-Demand" system dramatically increases the lifespan of your pump. Includes safety lock off trigger, fan to pinpoint spray nozzle, detergent cup, 19 ft. high pressure hose, and quick connection bayonet wand. Hooks to your garden water hose with no special adapters. For performance and value, this is an incredible deal. • Built in pressure relief safety valve

- 120V, 13 amps

ITEM 50956-1SAA **$99.99**

PRESSURE WASHER TURBO NOZZLE

Increase your cleaning power by 20%!

ITEM 35935-0SAA **$9.99**

DEWALT

DeWalt DW705

12" HEAVY DUTY COMPOUND MITER SAW

- 13 amps; 4000 RPM no load speed
- Spindle lock • Electric brake
- Stainless steel miter scale with 9 positive stops • 40 lbs. ship. wt.
- Includes 32 tooth blade
- 0-48° bevel capacity • 1" round arbor
- 0-48° miter left and right
- Capacities 5-1/4" crown moulding; 2 x 8 at 45° bevel; 4 x 4 & 2 x 6 at 45° miter
- Head lock down with handle for easy transport • 38 lbs. tool weight
- 100% ball bearing construction
- Factory reconditioned, factory perfect

LIMITED QUANTITIES

ITEM 51594-4SAA **$299.99**

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CHICAGO Electric Power Tools

SAVE $30 FROM OUR FALL '96 CATALOG

8-1/4" COMPOUND MITER SAW

- Electric brake stops blade in seconds
- Powerful 1-3/4 HP motor, 120V, 9 amp, 4900 RPM no load speed
- 5/8" arbor
- Cutting capacity 2-1/8" x 5-1/8" miter, bevel, and compound cut
- Miter positive stops at 0°, 15°, 22.5°, 30°, and 45° left and right
- Bevel positive stops at 0° to 45° left
- 20 lbs. shipping weight
- Includes free 8-1/4" multi purpose blade

ITEM 01078-2SAA **$99.99**

CONVERTS A 4" GRINDER INTO A CUT-OFF SAW

SAVE 50% FROM OUR BUYERS GUIDE

CUT-OFF SAW CONVERSION KIT

- Turns your 4" grinder into a cut-off saw
- Plate dimensions: 9-1/2" x 9-1/2"
- Spring returns arm to ready position
- Uses grinders side handle mount
- Maximum vise opening: 4"

ITEM 31848-1SAA **$9.99**

CHICAGO Electric Power Tools **HEAVY DUTY 4" DISC GRINDER**

- 115V, 5.18 amps, 10,000 RPM
- 5/8"-11 spindle with 7/8" arbor adapter
- 11" long, 4-1/2 tool weight

1/2 PRICE

ITEM 01711-4SAA **$19.99**

SAVE UP TO 33% FROM OUR BUYERS GUIDE

CONTROLLED PRESSURE, NON-MARRING HARDWOOD CLAMPS

These hand screws will clamp without scratching or marring your workpiece. Hardwood jaws distribute pressure evenly, and can easily be adjusted for non-parallel surfaces and odd shapes.

JAW LENGTH	JAW CAPACITY	ITEM	REGULAR PRICE $5.99 PRICE
8"	4-3/4"	04852 -3SAA	$3.99
10"	6"	04853 -4SAA	$4.99
12"	8-1/2"	04854 -5SAA	$5.99

CENTRAL MACHINERY

1/3 HP

5 SPEED BENCH DRILL PRESS

- 620 to 3100 RPM
- 8-1/4" maximum distance spindle to table
- 1/2" chuck
- 2" stroke, 8-1/4" swing
- 22-1/2" high, 49 lbs. shipping weight
- 1/3 HP motor

ITEM 05901-0SAA **$48.99**

DRILL PRESS WITH KEYLESS CHUCK

ITEM 34231-3SAA **$54.99**

DELTA®
Delta 22-540

LIMITED QUANTITIES

12" PORTABLE PLANER

- Motor: 15 amp, 120V
- Capacities: 12" width, 6" thick, 3/16" depth of cut • 26.2 FPM feed rate
- Table size with extensions: 12-1/8" x 26"
- 8000 RPM, 16,000 CPM
- Long lasting high speed steel, reversible, double edged knives
- Includes removable table extensions, and fold away depth adjustment for easy transport
- 27-1/4" x 20-1/2" x 15" overall dimensions
- 68 lbs. tool weight
- Factory reconditioned, factory perfect

ITEM 06177-1SAA **$299.99**

PLANER BLADES

ITEM 33075-0SAA **$19.99**

HALF OFF

12-1/2" ROLLER AND BRACKET SET

Double your table saw capacity! Attach to sawhorse or other surface and make your own roller table. Roller is 1-1/4" diameter and 12-1/2" long.

ITEM 30026-4SAA ~~$7.99~~ **$3.99**

Pittsburgh LIFETIME WARRANTY

2 PC. 3/4" HEAVY DUTY PIPE CLAMP SET

Pipe not included.

- Handle screw operating range: 2-1/8"
- 1-1/2" throat depth

SLASHED 57% FROM OUR FALL '96 CATALOG

ITEM 31255-4SAA **$2.99**

DRILL MASTER

TiN COATED FORSTNER BIT SETS

SAVE UP TO 25% FROM OUR FALL '96 CATALOG

Titanium nitride runs cooler, cuts easier, and lasts longer than standard steel! Includes 3/8" shanks and individually organized wooden case. Rockwell hardness range from 55-65 HRC.

20 PC. SET

- 20 sizes from 1/4" to 3/4" by 16ths, 7/8", 15/16", 1" to 2" by 8ths

ITEM 31130-7SAA **$34.99**

16 PC. SET

- 16 sizes from 1/4" to 2-1/8" by 8ths

ITEM 32404-8SAA **$29.99**

DRILL MASTER

15 PC. TUNGSTEN CARBIDE TIPPED ROUTER BIT SET

With long life tungsten carbide tips and the most used routing shapes, this is the set all serious woodworkers need. Ground to ultra close tolerances for the best finish available. Includes individually organized storage case.

- 1/4" shanks

Includes: 1-1/4" rabbeting♦, 1-3/8" cove♦, 1-1/16" roman ogee♦, 1-1/4" rounding over♦, 1/2" flush trimming♦, 1-3/16" 45° chamfer♦, 1/2" dovetail, 3/4" straight, 1/2" straight, 3/8" V-groove, 1/4" combination panel, 1/4" straight, 1/2" mortising, 1/4" self-piloting flush trim, 3/16" self-piloting 7° bevel trim

♦ Includes pilot bearing

ITEM 31164-9SAA ~~$49.99~~ **$39.99**

CENTRAL PNEUMATIC CONTRACTOR SERIES

18 GAUGE AIR BRAD NAILER

This unit has the features you need: safety trigger, adjustable nailing depth, durable aluminum magazine, and easy jam clearance.

- 55-95 operating PSI • 1/4" NPT inlet
- 3/8" to 1-1/4" brad length capacity
- 100 brad maximum capacity
- 18 gauge brads • Tool wt.: 2-3/4 lbs.
- Stainless steel driver & cylinder

ITEM 31308-3SAA **$39.99**

SAVE 20% FROM OUR BUYERS GUIDE

18 GAUGE BRADS PACKS OF 5000

SIZE	ITEM	PRICE
3/4"	33205-6SAA	$4.29
1"	33206-1SAA	$5.99

CENTRAL MACHINERY

SAVE 27% FROM OUR BUYERS GUIDE

DOVETAIL MACHINE

Just place stock and pull cam handles to positively lock material in place. Allows cutting tails, pins, half blind, and standard dovetails. Accepts stock up to 12" wide and 1-1/4" thick.

ITEM 34102-8SAA **$39.99**

CENTRAL MACHINERY

DRILL 1/4", 3/8", AND 1/2" SQUARE HOLES

MORTISING MACHINE

Make a square hole in the fraction of the time it takes by hand! Fence with hold down clamp keep workpieces from lifting off the table. Large capacity – up to 5" maximum height. Includes fence, workpiece clamp, and 1/4", 3/8", and 1/2" mortising chisels and bits.

- 1/2 HP, 110V, 2.3 amps • 5" throat
- 5" maximum workpiece height
- Accepts .745" chisel shanks
- 3580 spindle speed • 13-3/8" x 6" table
- 10-7/8" x 7-3/4" base • 60 lbs. ship. wt.

SAVE $30 FROM OUR BUYERS GUIDE

ITEM 35570-1SAA **$169.99**

DeWALT
DeWalt DW421

LIMITED QUANTITIES

RANDOM ORBITAL SANDER

Controlled Finishing System keeps pad rotation at a controlled speed whether on or off your work. This gives you better and quicker finishes while channeling dust into the collection canister.

- 2 amp motor • Dust sealed switch
- 360° shroud allows sanding in tight areas
- Porous rigid dust collection canister
- 100% ball bearing construction
- Removable top cap for easy service
- Factory reconditioned, factory perfect

ITEM 51532-0SAA **$49.99**

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Dust-Free Sanding

Eliminate hazardous dust *Before* it becomes airborne

Airborne dust is now being recognized as a major health hazard. Imagine sanding in a dust-free environment, where 98% of the dust created by sanding is gone.

How It Works

Dust produced by sanding is immediately sucked away through holes located in the sandpaper, the bottom of the sander's pad, AND around the outside edge of the pad (a FEIN exclusive). The extracted dust is contained by a powerful vacuum.

Unbeatable Finishes

Typically when you sand with normal sanders, your sander ends up riding on a bed of dust and broken abrasive. With the FEIN Sanding System, this "bed" of dust doesn't exist. Your paper cuts faster, cleaner, and lasts up to 10 times longer. You simply can't get the same finish by any other sanding method.

Automatic Vacuum

When you turn your Fein sander on, the vacuum starts. When you switch your sander off, the vacuum stops. . . automatically. The Fein Turbo II Vacuum is built to handle large amounts of super-fine dust.

It's easy to get more information, simply call and ask for a free color brochure: (800)441-9878

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TIPS FROM YOUR SHOP (AND OURS)

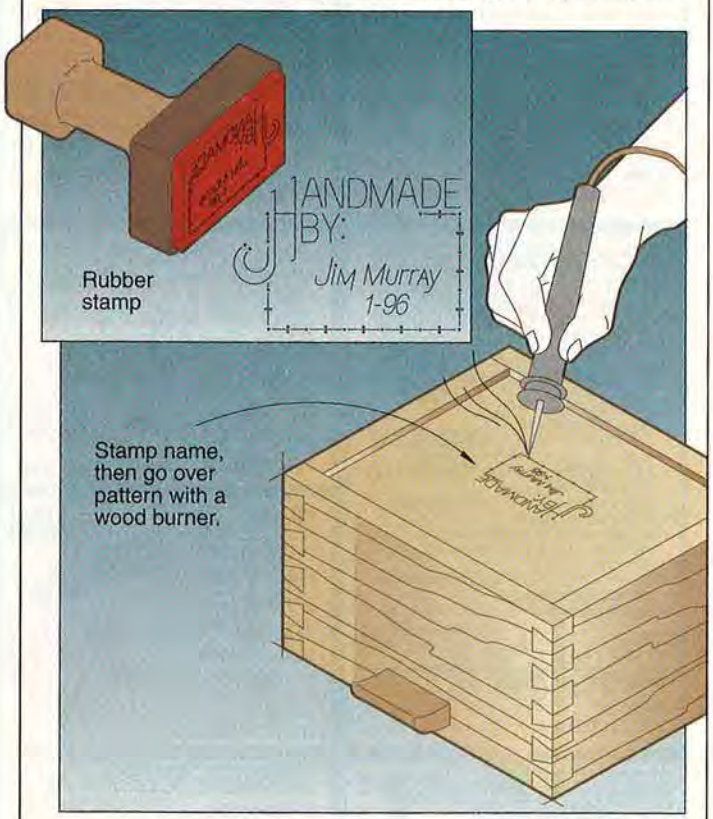
Continued from page 19

Branding-iron alternative

Personalized branding irons work well for putting your mark on projects, but I've found them expensive and lacking flexibility in the information they leave behind. A woodburning pen and rubber ink stamps—available in limitless designs and sizes, as well as personalized versions—provide me with a flexible alternative.

I simply stamp projects with a suitable design, then "trace" the design with the woodburning pen. I sometimes add information such as the date I built the project. I always stamp, burn, and lightly sand the brand before I apply the finish.

—James S. Murray, North Chili, N.Y.



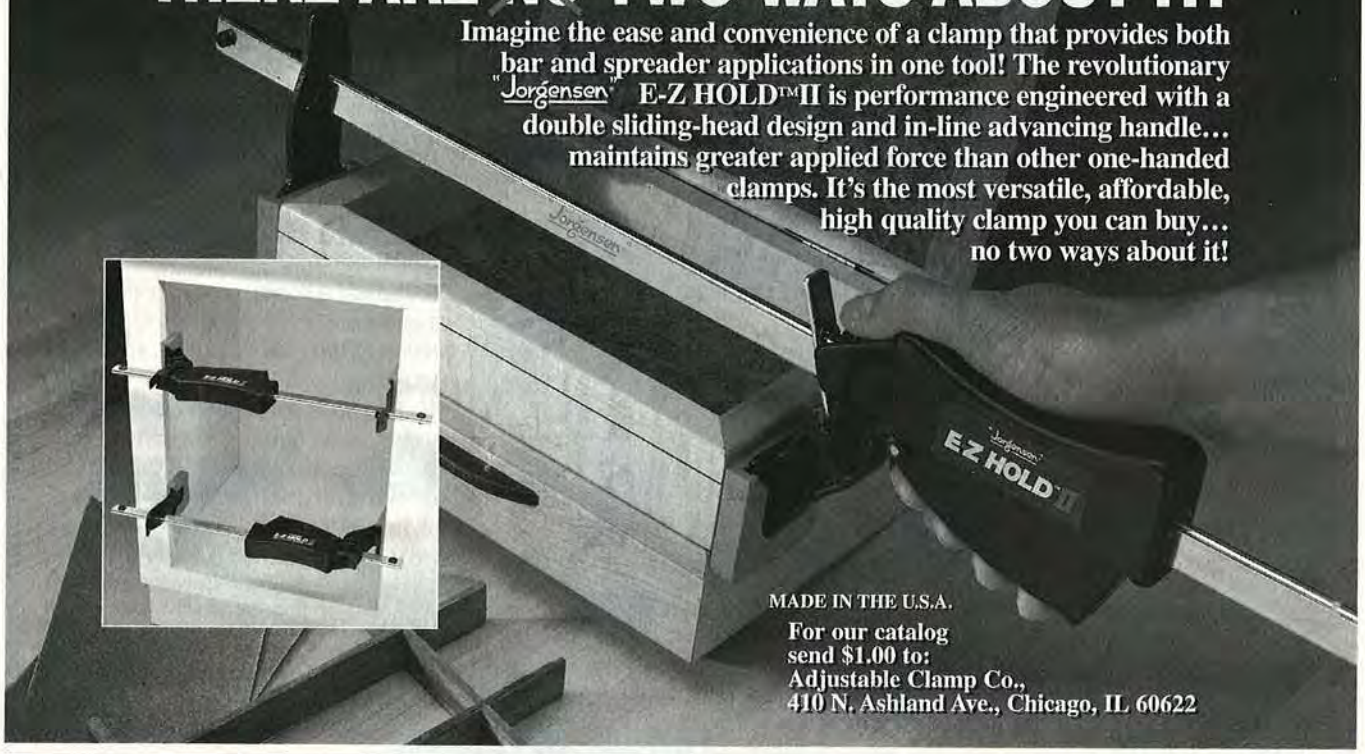
A FEW MORE TIPS FROM OUR WOODWORKING PROS

- A simple foot pedal lets you raise and lower the quill of your drill press for oscillating sanding operations. We built the pedal in conjunction with our drum-sanding table on *page 36*.
- To dress up plain plywood panels, consider routing in decorative grooves. Check out the technique we used on the country buffet top, *page 56*
- Need to apply paint to one part of a project and clear finish to the rest? See how we did just that on our country buffet project, *page 57*.

"Jorgensen" E-Z HOLD™II

THERE ARE NO TWO WAYS ABOUT IT!

Imagine the ease and convenience of a clamp that provides both bar and spreader applications in one tool! The revolutionary "Jorgensen" E-Z HOLD™II is performance engineered with a double sliding-head design and in-line advancing handle... maintains greater applied force than other one-handed clamps. It's the most versatile, affordable, high quality clamp you can buy... no two ways about it!



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Give Yourself Some More Breathing Room.

The Best Just Got Better!

Introducing The New Model 350

- 55% More Air Flow
- Ultra Quiet
- 95% Ashrae tested main filter
- All Components UL Listed
- Lifetime Warranty
- 30 Day Money Back Guaranty.

*Better Homes and Gardens® WOOD® Magazine (Nov. '95)

JDS AIR-TECH 2000™

Recent medical studies show that breathing wood dust can be hazardous to your health. The JDS AIR-TECH 2000 will dramatically improve the quality of the air you breathe.

Our model 350 delivers 550 CFM of filtered air. This will clean the air in a 20 x 20 x 8 foot area ten times per hour. For larger areas, our dual speed model 8-12 will deliver 800 or 1,250 CFM of filtered air for only $495. Our model 10-16 will deliver 1,000 or 1,600 CFM of filtered air for $695.

The JDS AIR-TECH 2000 systems will remove 99% of particles as small as five microns and 80% of the particles as small as one micron.

Our unique design makes both ceiling installation and filter changing quick and easy.

For the removal of odors, fumes and smoke, our optional charcoal filter is available.

$259.00
Model 350

Another quality product from
Manufactured in the U.S.A.

JDS COMPANY
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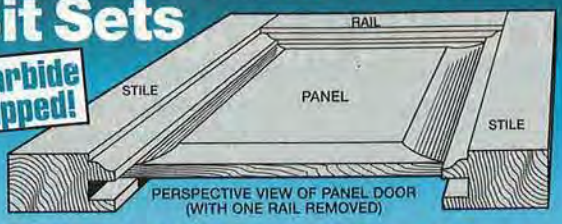
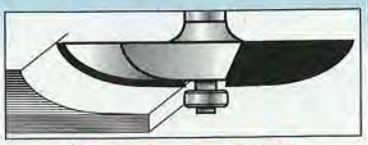
To place an order or for the dealer nearest you call us toll-free.
And give yourself some breathing room.

Save 55% on MLCS Raised Panel Door Bit Sets

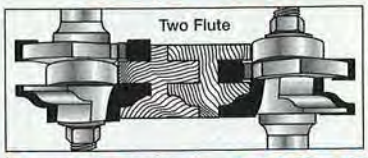


Make Beautiful Raised Panel Doors with your 1/4" or 1/2" Router, or with your 1/2" or 3/4" Shaper.

Our professional production quality router bits make it quick and easy to produce attractive raised panel doors. Our reversible combination bit makes a matching rail and stile frame. The panel raising bit with ball bearing guide makes a perfect raised panel every time!



✶Raised Panel Router Bit



✶Reversible Combination Rail & Stile Bit
Works with stock from 11/16" to 7/8".

Includes instructions & professional tips!

Carbide Tipped RAISED PANEL DOOR SETS			
SET#	BIT STYLE	RAISED PANEL LRG. DIA.	SET PRICE
#1301	1/4" Shank Router	✶ 2"	$69.95
#1302	1/2" Shank Router	✶ 3-1/2"	$79.95
#1303	1/2" & 3/4" Shaper	4-5/8"	$99.95

✶Ball bearing included

QUANTITY DISCOUNT When ordering 3 or more router bits deduct $1.00 each!

1/4" SHANK CARBIDE TIPPED ROUTER BITS

Professional Production Quality Guaranteed!

1 OGEE RAISED PANEL
#1423 2" Large Diameter $29.95

2 TONGUE AND GROOVE
#1333 Straight $29.00
#1335 Wedge $29.00

3 BULL NOSE
#1330 1/2" Dia. of Circle $16.00
#1331 3/4" Dia. of Circle $21.00

4 PATTERN/FLUSH TRIM
#1340 1/2" Dia., 1" Cutting length. $15.00
#1341 3/4" Dia., 1" Cutting length $17.00

5 ROUND OVER
#1314 (1/8" Radius) $11.00
#1315 (3/16" Radius) $11.00
#1394 (1/4" Radius) $13.00
#1316 (5/16" Radius) $14.00
#1369 (3/8" Radius) $15.00
#1370 (1/2" Radius) $17.00

6 FLUSH TRIM
#1337 3/8" Dia., 1" Cutting length. $8.50
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RED ALDER

The Pacific Northwest's most abundant hardwood

Just as a connoisseur of Eastern ham insists that it be smoked only with hickory, the salmon fisherman of the Pacific Northwest demands his fish be cooked over alder coals. That's entirely fitting to this tree that prefers living close to water.

As the most abundant hardwood species of the region, red alder has for a century been the seafood industry's choice for smoking fish. And loggers who daily fell the mighty Douglas fir prefer the heat of a winter fire fueled by red alder. Until recent years, these were the wood's primary commercial uses in a land ruled by lumber-producing conifers.

In fact, red alder was pretty much dismissed for production because, like a weed, the species popped up in clearings where other trees were felled. Burnt-over tracts also were quickly covered by young alder stands, often threatening more commercially important softwood seedlings. Today, loggers look to the red alder to supply a growing market along the West Coast, in Asia, and in Europe for furniture wood.

Wood identification

Red alder (*Alnus rubra*) grows best in moist conditions at lower elevations throughout its range. The greatest volume occurs around Washington's Puget Sound and in Northwest Oregon, where trees may reach heights of 120' and diameters of 36".

At first glance, you might mistake red alder for aspen or paper birch because the tree has light gray bark with dark mottling.

Older specimens in damp growing conditions feature dark spots of moss. Red alder's leaves also remind you of a birch's, yet they are nearly twice as long, with a furry underside. In the fall, they drop to the ground still green.

The wood of red alder, at 28 lbs. per cubic foot dry, weighs about one third less than red oak. The heartwood and sapwood are both a rich reddish brown with straight, close grain. When red alder is cut in the autumn, the wood color is frequently a golden yellow. Freshly cut logs may stain if not processed within a few weeks after harvest.

Uses in woodworking

Red alder makes excellent core stock for plywood because of its stability and good gluing properties. Also, it's commercially used on the West Coast for production turnings, cabinets, paneling, doors, millwork, unfinished furniture (especially chairs) and waterbed frames. Because it has a close grain and readily accepts stain, red alder can imitate cherry, mahogany, and even walnut. But because it tends to be somewhat softer than these woods, you should avoid using it for tabletops and other projects that take abuse. And always use it indoors; the wood isn't durable.

Natural range

Availability

Due to increasing demand for commercial use, red alder prices on the West Coast actually are competitive with the cost of many Eastern hardwoods of its caliber. Expect to pay about $3 per board foot for Selects and Better, the finest grade.

You may be able to buy red alder at retail hardwood outlets in the Midwest. But in the eastern U.S., hardwood species such as yellow poplar and red gum beat its price.

PERFORMANCE PROFILE

red alder
(Alnus rubra)

Red alder

If you plan to order red alder from a small sawmill or operator be sure to specify normal, uniform color. Although red alder may be about the easiest North American hardwood to dry, it does require a special kiln schedule that avoids discoloration through the oxidation of extractives. This oxidation frequently results in mottling. By introducing steam in the kiln drying, skilled operators can produce colors that range from yellow to dark red, a technique that can enhance the final finishing if red alder is to be substituted for costlier stock. Once you have your red alder, you'll want to keep the following tips in mind.

Machining methods

Although you can work red alder easily with hand and power tools, the wood does have a tendency to blunt cutting edges. So keep sharp ones handy or resharpen for high-quality cuts.

- Ripping poses no problems with red alder because of its even texture. Crosscutting does require a backing board to reduce any possible tearout.
- If you experience tearout when planing, either reduce the feed rate or adjust the wood to a slight (15°) angle to the cutterheads.
- For routing, slow the feed rate for smoother cuts.
- All adhesives work well with red alder without special preparation of the mating surfaces.
- Red alder is known in the wood products industry for its nail-and-screw holding power. But, predrill for screw holes to lessen the chance of splitting.
- Red alder tends to fuzz just a trace during sanding, but unlike rock-hard sugar maple, it won't retain the scratches left behind should you skip a grit.
- Because of its color consistency and pore structure, red alder takes all types of stains equally well without sealing or otherwise conditioning the wood.
- You can use any type of clear finish on red alder. It also holds paint extremely well.

Carving comments

- An even texture, straight grain, and relative softness (similar to butternut) makes red alder easy to carve with both hand and power tools.
- With only subtle figure, this is a wood you'll want to try for naturally finished relief carvings as well as three-dimensional carvings destined for paint or stain.

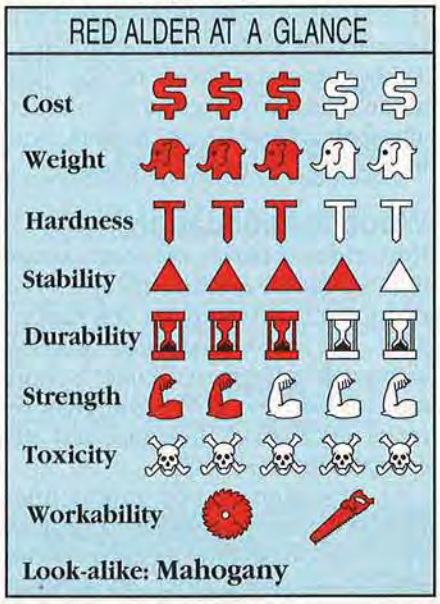
Turning tips

- Be sure to use sharp turning tools to avoid tearout, otherwise expect red alder to turn with the ease of cherry, only softer.

SHOP-TESTED TECHNIQUES THAT ALWAYS WORK

Any exceptions pertaining to this issue's featured wood species appear under bold-faced headings elsewhere on this page. But for all wood species, always practice the following.

- For stability in projects meant for indoor use, work only wood with a maximum moisture content of 8 percent.
- Feed straight-grained wood into planer knives at a 90° angle. To avoid tearing, feed figured or twisted grain at a slight angle (about 15°), and take shallow cuts of about 1/32".
- For clean cuts, rip with a rip-profile blade having 24-32 teeth. Smooth cross-cutting requires at least a 40-tooth blade.
- Avoid using standard twist-drill bits. They tend to wander in the wood and cause breakout. Use brad-point bits and a backing board under the workpiece.
- Drill pilot holes for screws.
- Always rout with sharp, preferably carbide-tipped, bits and take shallow passes to avoid burning.
- Carving hardwoods means fairly shallow gouge bevels—15° or more—and shallower cuts.



Compiled with woodworkers Jason Katz and Tom Oslo Illustrations: Steve Schindler

ACCESSORIES

Countershaft
A second countershaft reduces the turning speed to a 1:3 ratio to work with 1/3 the turning speed, but triple the power. (Or triple the speed at 1/3 the power.) Also allows for a rotating center (instead of a tailstock) when working on large wooden pieces.
No. MH162030 **Price $35.99**

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Required for all square and asymmetric work pieces. Jaws can be individually moved and reversed.
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Three-Jaw Chuck
For fitting round, triangular or hexagonal work-pieces.
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No. MH162260	2" Sanding Discs, 10 Pcs.	**$7.49**
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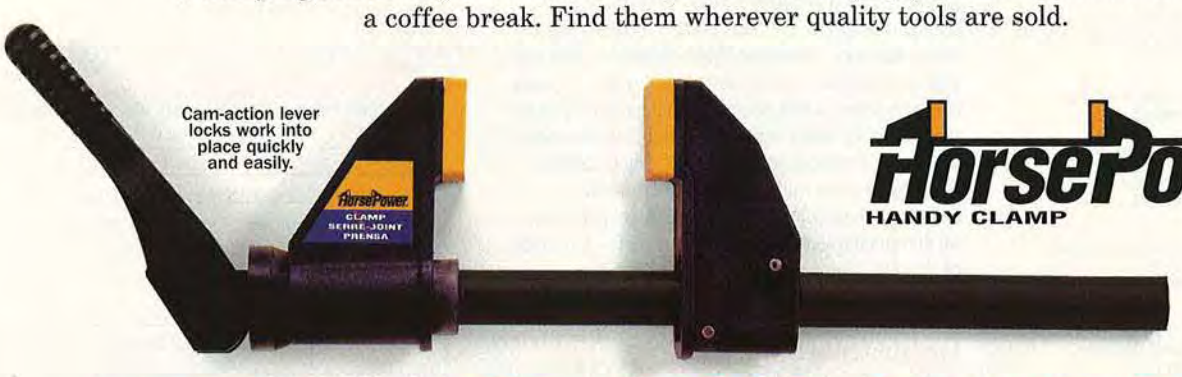

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Step back into yesteryear with

THE COOPER OF CAMBRIDGE

Few things remain as they always were. But the wooden barrel is one that has. Maryland cooper Ken Knox still makes them by the thousands in turn-of-the-century fashion.

Continued

Cooper Ken Knox believes there will always be a need for barrels. Adding berry barrels, buckets, planters, and kegs to his line of slack cooperage has kept the business barreling along.

The Cooper of Cambridge

Above: Outside the cooperage, James Ennals trims raw logs to stave length. A powered carriage moves the 36"-diameter blade forward and back.

Right: Bob Fairbanks feeds the cylindrical keg saw, which quickly cuts each split of wood into a curved stave.

Your grandparents might recall the times when flour, crackers, and other dry staples arrived at the local grocery store in wooden barrels. But to most of us, barrels made of staves and hoops are nothing more familiar than props we see in western movies, or sawn in half, nostalgic containers for our patio plantings. That's why I was surprised to hear about a company on Maryland's Eastern Shore that still produces slack cooperage, the barrels made to ship and store dry materials.

When I telephoned Ken Knox, cooper and owner of Brooks Barrel Company in Cambridge, Maryland, he invited me to come see the barrel-making operation for myself. It turned out to be quite an interesting visit because Ken's knowledge of machines and coopering was a lesson not so much of classic craftsmanship, but in living history.

Peter J. Stephano

Features Editor

Coopers craft wooden barrels. In the days before machines made the work much easier, their hardened hands dressed the ash, gum, oak, pine, or poplar staves with an adze or a saw. Then, with drawknife and jointer plane, they gave them beveled edges and a contoured shape. Using a special tool called a croze, they meticulously cut in each one the special groove that would accept the round barrel head. Of ash, elm, or hickory, they made the hoops that held the container together.

A hardworking cooper of the early 1800s might get up 10 flour casks in a day. The smaller kegs, undoubtably more. The large-capacity hogshead, fewer. But there were customers for each of them because before the widespread use of the cardboard box in the late 1940s, wooden barrels were the world's primary shipping and storage container.

Made in sizes ranging from one- to 60-gallon capacity, wooden barrels are one of the strongest containers ever developed. Their double-arch construction (see illustration, above) makes them strong and resilient.

Anatomy of a wooden slack barrel

A regular container on wheels, a wooden barrel can be handled by one man even when loaded with several hundred pounds of material. Due to its bilge (middle bulge), a barrel rests only on a

Above: While others take their breaks, Ken sharpens the saws. He also maintains and fixes the other aging machinery in his cooperage, often creating small parts right on the spot.

Right: At the crozer, keg staves are tapered, beveled, and cut with a croze, then piled in stacks of 72 called hacks to air-dry.

small surface when on its side, cutting friction to a minimum. And while on its side, a barrel readily responds to a push in any direction. When rolled, it covers distances quickly with little effort—its own weight moves it down an incline. Because it pivots on a small contact point, a barrel easily can be turned and guided.

Ken Knox, 40, knows all this well. For the past 19 years, wooden barrels have been his life.

Once there were barrels everywhere

"A barrel is a barrel. They haven't changed much," says Ken matter-of-factly. In the shipping room of his Brooks Barrel Company, which hasn't changed much in nearly 50 years either, he stands before a stack of barrels awaiting delivery. Ken wears the fresh, crisply pressed tan shirt and pants bearing the company insignia in which he starts each day.

"At one time, there were cooperages everywhere along the Eastern Shore because they raise lots of chicken here," Ken comments. "They packed chickens in barrels for shipping. So where there was a large processor, there was a cooperage. But the cardboard box spelled the end for most wooden barrels. By the 1950s, there weren't many cooperages left. Paul Brooks founded this business in 1950. He started out reconditioning and recycling barrels. Then he began buying machinery from closing cooperages to make new barrels."

Ken hired on in 1978, with an understanding that he might someday want to buy the barrel business from Paul (which he did in 1991). "He had five people working when I started, and I began at the bottom," recalls Ken. "I had to learn every step, do every job, figure out how to fix each machine."

Why, when other cooperages were closing, would someone want to get into barrel making as Paul Brooks, then Ken, did? "This is one of six remaining slack cooperages in the country, to my knowledge," the cooper replies. "But barrels will always be needed. The slack barrel is still the best way to ship fresh fish, oysters, and crabs to market because they ice them down. As the ice melts the water runs out.

"But barrels have other uses, too. They're popular as decorative items and as planters. And I'm working on a bid to make yellow poplar barrels for a Jamaican coffee company to ship their beans to Japan in. That's a potential of 15,000 a year."

Yet, those barrels would represent only a small portion of production. Ken calculates that he uses nearly 2 million pounds of wood a year for staves and heads—mostly yellow pine from Maryland, Virginia, and Delaware. That goes into a couple hundred thousand barrels and kegs.

Who buys them? Seafood shippers, of course. But also specialty

Continued

The Cooper of Cambridge

shops, home and landscape centers, restaurants, and display companies. Customers even drop out of nowhere. "We have sales reps," Ken notes, "but people just seem to find us. It's not like there's a barrel company on every corner."

Even yesterday's coopers ran machines

Ken likes to say that walking into the Brooks Barrel Company cooperage is taking a step back in time. Although it isn't as visually historic as a visit to Colonial Williamsburg, he is right.

Locals believe that the hodgepodge of buildings that's home to the cooperage had its beginning as a railroad station. That identity has long been lost, although railroad tracks still lie adjacent. The heart of the cooperage, however, does create the din of a busy rail yard. A cacophony of sound comes from assorted machines as they contribute to making barrels. And it's these machines—coated with a patina of time and toil—that come from the past.

"This equipment isn't made anymore," says Ken. "And when it breaks down, which isn't infrequently, I have to fix it." To do that, he draws from an inventory of spare parts accumulated over four decades and knowledge learned on the job. And while breakdowns can occur at any moment, there are set times for regular maintenance, such as saw sharpening. "Just like any aspect of woodworking, saws have to be kept sharp. So when the men [he has eight employees] take their breaks at 10 a.m. and 2:30 p.m., I sharpen the saws because I'm the only one who can."

Ken threads his way between machines, stock, and barrels in process, to the rear of the cooperage and outside. "This is where the staves begin," he says of the operation before him.

Sweating in the summer humidity, James Ennals runs the cutoff saw that trims 18–20"-diameter pine logs to stave length. It takes muscle to wrestle the logs against the 36" blade, even though there's mechanical help.

Just inside, another worker feeds the cutoffs into a bandsaw to halve them. He then places the halves on a table separating him from the keg saw.

The fragrance of fresh-cut pine permeates the old building, but it's especially pungent around the keg saw. Itself resembling a barrel, but of steel, the keg saw cuts the wood fed to it into curved staves of ⅜" thickness that will be used for kegs. (Kegs are small barrels under 18" tall.) The larger barrel saw nearby produces longer, but straight, barrel staves.

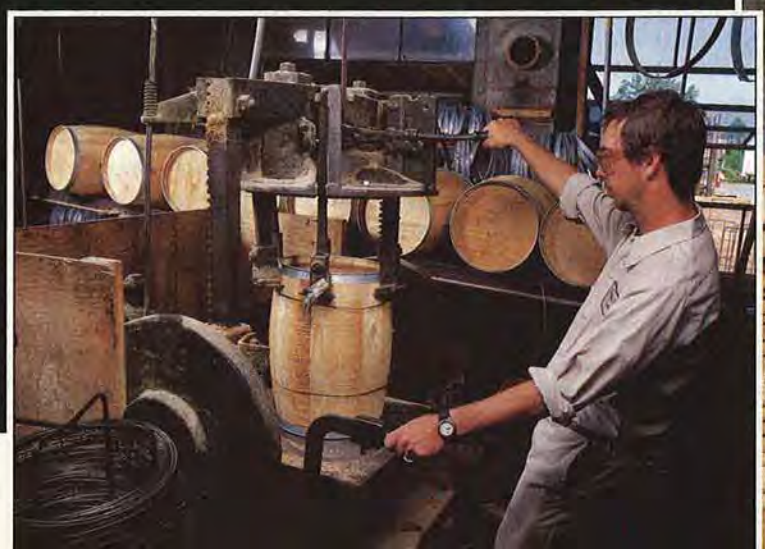
From the keg saw, keg staves pass to a crozer, much like a vertical jointer, where the operator—in one movement—cuts the chamfer, called a chime, on either end, plus the groove labeled the croze, the bevel on each side, and the taper to their length. It takes well-defined body control and timing sense to hold each stave to the machine just long enough to make all the cuts. Barrel staves follow a slightly different path, as you'll soon find out.

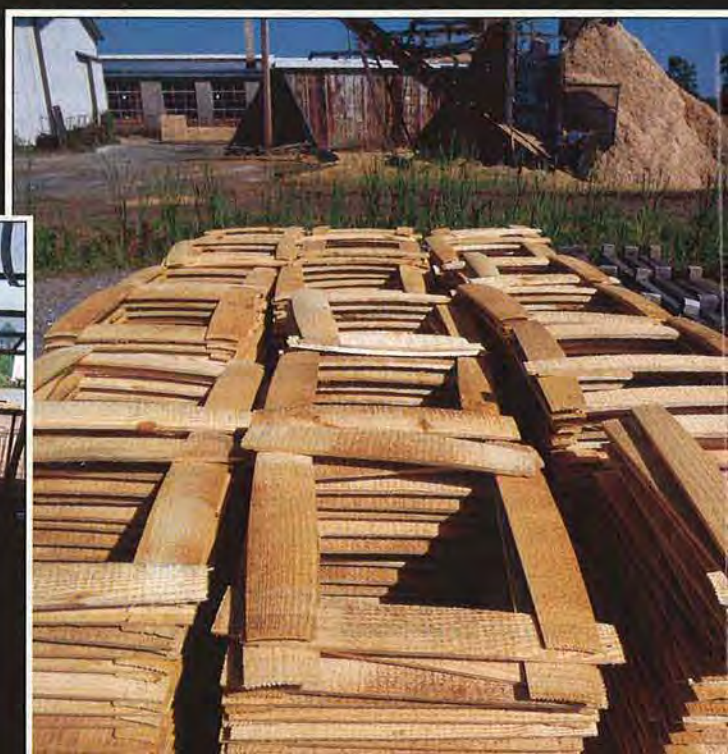
"After the staves have been made, we stack them outside to air-dry for a few weeks," explains Ken. "Then, they go to the kiln."

The lead cooper recites the terminology regarding staves. "Staves are always stacked by the hack, which is 72 staves. Then, the

Below: On kegs, hoops of twisted wire take the place of flat steel. A good month will see 10,000 kegs roll from the Brooks Barrel Company cooperage.

Right: Green yellow pine staves air-dry for a few weeks before going to the kiln. A bunk of 864 staves represents only about half an hour of production time.





hacks are usually placed 12 to a pallet in what we call a bunk [see photo below left]. There are 12 hacks to a bunk—864 staves in all. I remember one time when I produced 16 bunks in a day. That's still some kind of record."

Priceless equipment makes up a barrel

"A cooper can put a steel hoop on a barrel only if he has a hoop machine," says Ken, leading a historical tour of barrel-making machines. "This Worthington hoop machine, built about 1915, is one of two in the nation that I'm aware of. It shears rolled, electrogalvanized steel to a width of slightly more than 1", cuts the metal band off to prescribed length and punches two holes in the end, then rolls an edge that enables the hoop to be driven on. I've never run it all day, but it could make maybe 5,000 hoops."

Next in line is the wire machine, which rotates and twists heavy wire into hoops for kegs. "It was made by American Steel & Wire Company of Joliet, Illinois, in 1903," Ken remarks. "I have two of them, and don't know if there are any more in existence. She's very temperamental."

A few steps from the wire machine stand a pair of hoop expanders, built in 1905 in Chicago by William Gladner Machine Works. "They expand the hoops so that a cooper can more easily put them on the bottom of the barrel," says Ken.

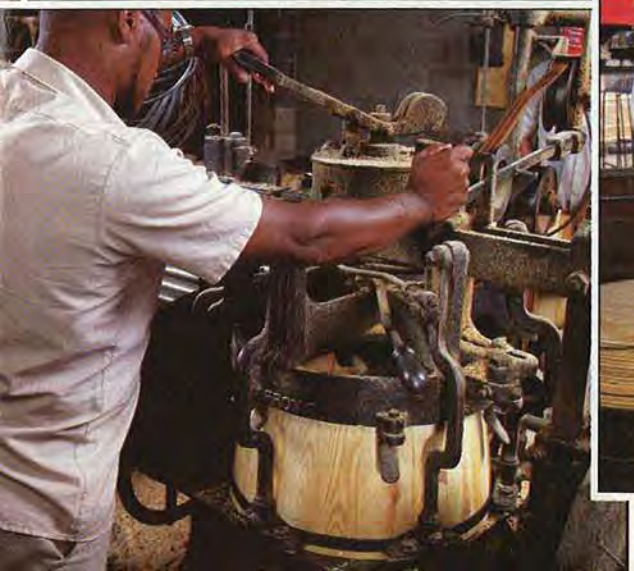
More machines make up the tour, each doing its singular part. None, though, are more impressive than the ones charged with assembly—the trusty 5-in-1 machines. "These were made by the E.B. Holmes Co. in Buffalo, New York," Ken remarks. "The last one was built about 13 years ago to the tune of $37,000. I have six of them, with three in service. A few years ago, I bought a crate of spare parts for $4,000. Now, if anybody in North America needs parts, they come here.

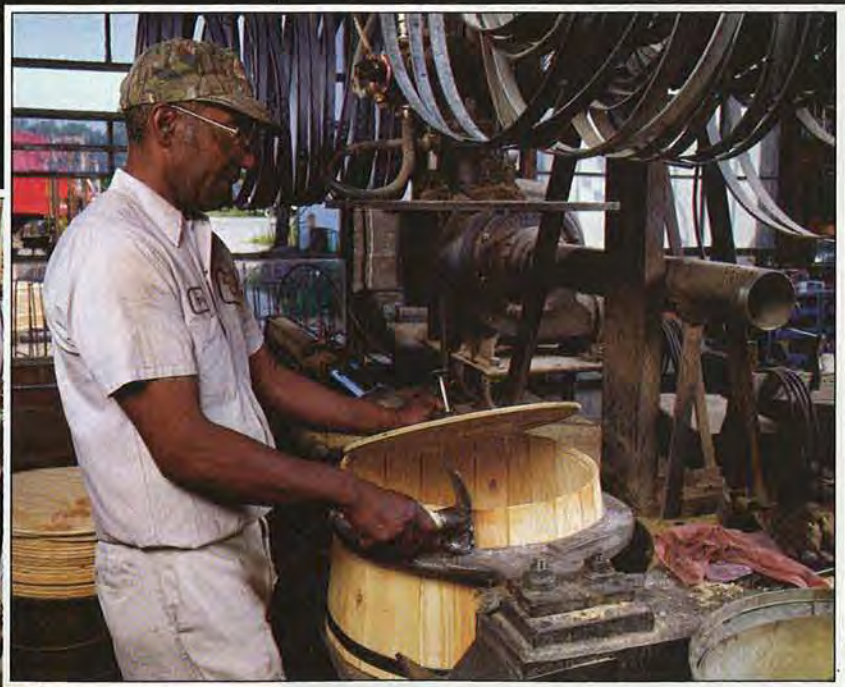
"The way this functions," he continues, "it does five jobs at once. A worker will first grab his setup ring, then enough staves to fill it. An experienced cooper can tell by feel just how many staves he'll need to fill the ring. He next takes the top hoop and pulls it down on the staves. Taps on the staves with a little hammer make them as even as possible. Then, he pulls the lever and the machine drives the hoop down over the staves (see photo below). When he releases it, part of the machine lowers onto the barrel and it starts rotating. While it rotates, the chamfer knife cuts a bevel on the staves. The croze knife follows to cut a rabbet for the head. Lastly, a lance knife runs along and squares the edge."

Across the aisle from the 5-in-1, a man installs heads in the newly raised barrels. As a barrel comes to him, he reaches with one hand to a stack of ¾" plywood heads and stabs one in the center with a tool resembling a large ice pick. The head in hand, he places it inside the barrel staves, as shown below. With his foot, he hits a pedal, and a large flat plunger lowers itself onto the head and presses it into the croze. A nailer will secure the metal hoops, and another slack barrel will be complete—just like the one before it and the one that will follow. After all, as Ken pointed out, a barrel is a barrel.

Below: The old 5-in-1 machine raises the staves, drives the steel hoops, chamfers, cuts the croze, and edges the barrel in one operation.

Right: Harry Johnson places a plywood head in the barrel. His machine will seat it in the croze, and he'll pass it along for nailing.





Photographs: Steve Uzzell Illustration: Don Jenson

DISPOSABLE

Print this article

Do real woodworkers use disposable brushes? We do, but we choose them wisely and restrict their use to specific finishing tasks. Here's what you need to know before selecting a disposable brush for your next project.

Chances are your local hardware store or home center stocks most or all of four types of disposable brushes in widths from 1" to 3". They are: natural bristle (hog hair, typically), synthetic bristle (nylon, polyester, or a combination of both), foam, and 3M NewStroke brushes (with bristles made from a proprietary synthetic material).

These brushes, shown in the photo *below,* normally cost less than $2. You often can purchase 1"-and-narrower versions of the synthetic-bristle brushes in bulk for as little as 25 cents each.

Because of the low cost, you can pitch disposable brushes after a single use and save yourself the hassle of cleaning them. But, as we'll point out in this article, disposables work better for some jobs than others.

When using a disposable brush makes sense

Make no mistake about it. A high-quality brush (often costing $10 or more) almost always will outperform a disposable brush. Better brushes hold more material, and help you apply it more smoothly with fewer bubbles or loose bristles. That's because high-quality brushes have more bristles than less-expensive brushes, and the bristles are better bonded to the brush handle. Also, the bristles are longer, softer, better flagged on their ends, and tapered toward the application end. As you can see in the cutaways of the four brushes *right*, disposables have short, untapered bristles with little flagging (split ends), and only a small amount of material holding them to their handles.

Nevertheless, disposables make a lot of sense for jobs that don't require a super-smooth finish, or when you just don't want to hassle with brush-cleaning chores. Here's a listing of the finishing or gluing products that we've found most appropriate for use with disposable brushes:

•*Oil-based finishes.* Whenever you apply a finish such as polyurethane, shellac, lacquer, or

Four common choices of disposable brushes include, from left, 3M NewStroke, foam, synthetic bristle, and natural bristle.

BRUSHES A sensible choice for many application tasks

oil-based stain, you need to thoroughly clean the application tool with solvents such as paint or lacquer thinner. Besides the cost of the solvent and the cleaning hassle involved, you also have to take the used solvent to a proper disposal site (if you can find one).

Cutaway views of disposable brushes reveal their low-cost construction. From left, natural bristle, synthetic bristle, foam, and 3M NewStroke.

To use disposable brushes with these products and still get a smooth finish, apply only your base coats with them. Then, apply the top coat with a spray gun, aerosol can, or high-quality natural-bristle brush.

•*Two-part adhesives and finishes, and contact cement.* Products with separate resin and hardening agents, such as epoxy, begin to set up as soon as you mix the two parts. This makes it impossible to clean the brush, so a disposable is your only sensible option. We also use disposable brushes to apply fast-drying contact cements.

•*Finish removers*, especially the more-potent formulations that contain methylene chloride, acetone, or toluene, can dissolve or weaken bristles. The stripping process also loads dirt, paint (possibly contaminated with lead), and other nasty byproducts onto your application tool. So, you might as well use a disposable brush for this task.

Our recommendations

With oil-based finishes we obtained our best results with foam and natural-bristle brushes. Foam brushes yielded the smoothest finishes so long as we were careful to avoid the bubbles that often result from stroking them back and forth too much. The natural-bristle brushes produced finishes nearly as smooth, and were less affected by strong solvents than the foam brushes.

The synthetic brushes were much too stiff and left noticeable brush marks in all finishes. However, you often can find these brushes sold in bulk at unbelievably low prices, so you may want to stock up on them for gluing tasks.

The 3M NewStroke brushes were good performers with a wide variety of finishes. They were a little pricier than the others at the outlets we shopped.

Written by Bill Krier with Dave Henderson
Photographs: Bill Hopkins, John Hetherington

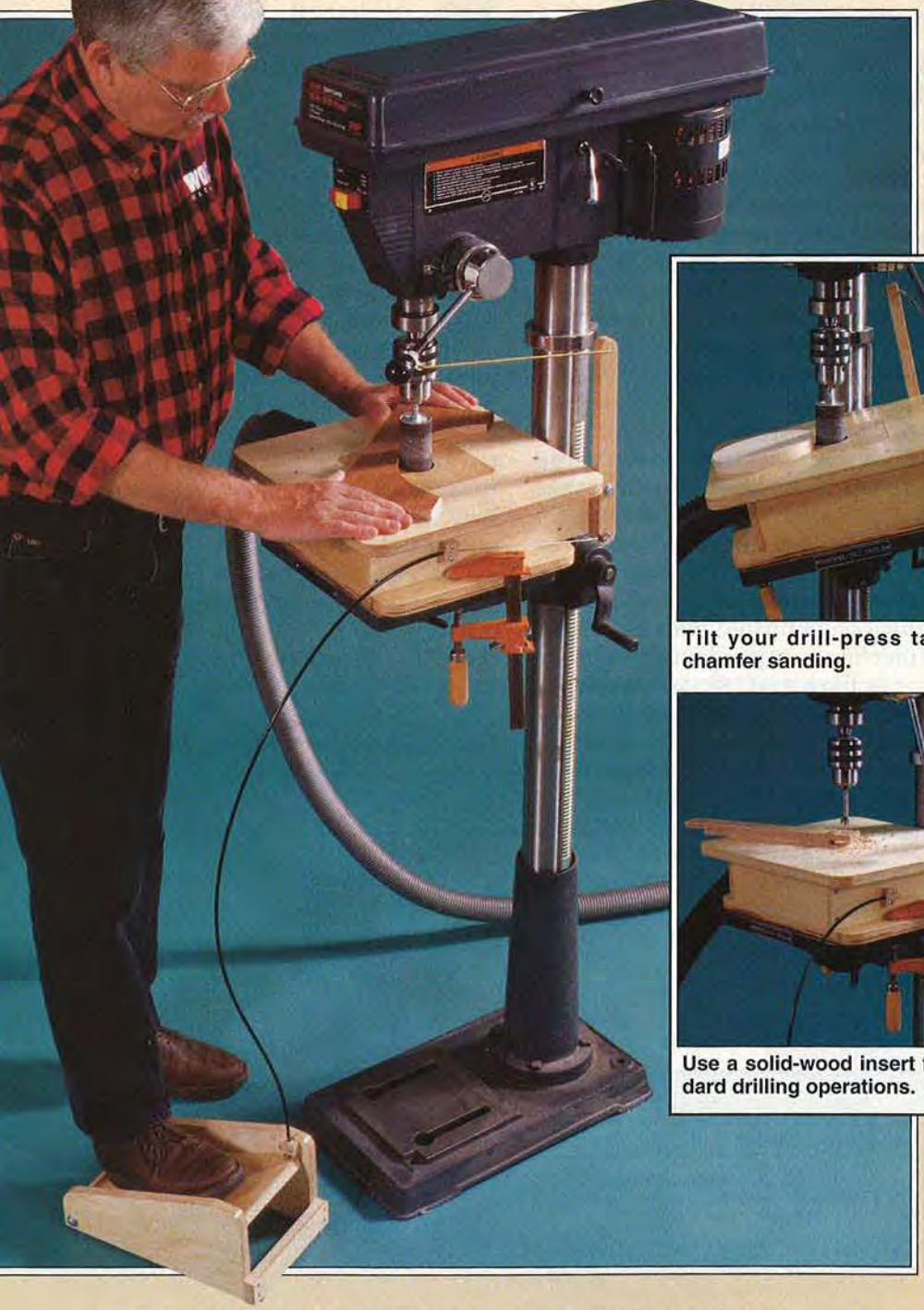
WHAT TO KNOW BEFORE YOU GO DISPOSABLE

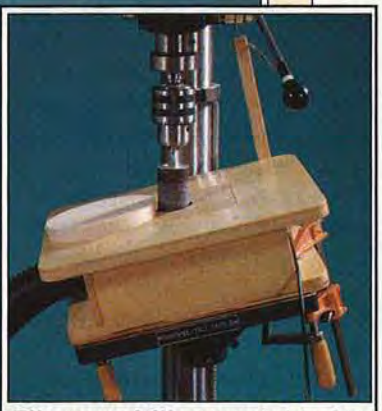
BRUSH TYPE	PROS	CONS	COMPATIBILITY WITH VARIOUS BRUSH-ON PRODUCTS (1)							APPROXIMATE COST PER BRUSH (3)
			POLYURETHANES AND VARNISHES	SHELLAC	WATER-BASED FINISHES	LACQUER	OIL-BASED STAINS	DRYING OILS (2)	METHYLENE-CHLORIDE FINISH REMOVERS	
FOAM	Low priced. Holds large quantity of finish. An excellent choice for water-based finishes, and also works well with drying oils and polyurethanes.	These brushes will dissolve in contact with strong solvents. Foam tends to tear in contact with sharp edges or rough surfaces. Cannot be cleaned, so you must complete finishing task without stopping.	C	U	C	U	C	C	U	$ .50
NATURAL BRISTLE	Produces good results with all finishes except water-based products. We found that we could get several uses from each brush by cleaning them. Ideal brush for finish removers. Buy versions with the longest bristles you can find.	Do not provide a high-quality finish the way that expensive natural-bristle brushes do. Tend to shed bristles while being used. Water makes natural bristles puffy.	C	C	U	C	C	C	C	1.00
SYNTHETIC BRISTLE	Low priced, but we found few good uses for these brushes. Worked well for spreading woodworking glues and epoxies after we trimmed the brush to 3/4" length.	Stiff, unflagged bristles tend to leave pronounced brush marks regardless of finish being applied. Bristles dissolve in lacquer thinner, alcohol, methylene chloride, and other solvents.	C	U	C	U	C	C	U	.50
3M NEW STROKE	Long handles are made from recycled paper. Nicely flagged bristles apply finishes nearly as well as natural-bristle and foam brushes.	Strong solvents may soften or dissolve bristles. Stiff bristles do not hold much finish.	C	S	C	S	C	C	S	1.50

NOTES:

1. C Compatible. Bristles unaffected by products.
   S Bristles will soften after 20-30 minutes of use with this product.
   U Unsuitable for use with this product.
2. Products that include one or more drying oils such as linseed or tung oil. These products include Watco Danish Oil and Deftoil.
3. Prices we paid locally for 2" brushes.

Deluxe Drill Press





Tilt your drill-press table for chamfer sanding.

Use a solid-wood insert for standard drilling operations.

Expand your drill-press' capabilities with this easy-to-make auxiliary table. A simple pedal mechanism, attached to the quill via a bike brake cable, levers, and brass bar, lets you raise and lower the quill and attached sanding drum for oscillating sanding operations. Attach a vacuum hose to the hollow table for dust-free sanding. And, for regular drilling, just add a solid insert in the table.

Note: Please see the Buying Guide at the end of the Bill of Materials for our source of hardware and Baltic birch plywood for this jig.

Let's begin with the table base and midsection

1 Cut the table base (A), sides (B, C), and front and back (D) to the sizes listed in the Bill of Materials.

2 Mark and cut the 1" radiused corners on the base (A).

3 Mark and cut the rabbets and dadoes in the sides (B, C) where dimensioned on the Table Exploded View drawing and on the Parts View on the *WOOD PATTERNS®* insert in the center of the magazine.

4 Drill or cut a hole to fit your vacuum end, centered in the table side (C).

5 Dry-clamp table pieces B, C, and D together. Drill the countersunk mounting holes through the pieces. Glue and screw the pieces together.

6 Position and clamp the table midsection (B, C, D) to the base (A). Drill the mounting holes, then glue and screw together.

Add the tabletop and inserts next

1 Cut the tabletop (E) to size. Cut its corners to shape.

2 Using the Parts View drawing on the *WOOD PATTERNS* insert in the center of the magazine for reference, mark the location of the 5¼"-square opening in the center of the top (E). Drill a ½" hole at each corner, and use a jigsaw to cut the opening to shape.

3 Rout a ⅜" rabbet exactly half the thickness of your top (E) along the top edge of the opening. Leave the setup—you'll use it later to rout the bottom side of the mating inserts (F).

Print this article

Add-On It transforms your tool into an oscillating spindle sander

4 Measure the opening size in the tabletop (it should measure exactly 6"). Now, cut the inserts (F) to the size of the rabbeted opening *less* 1/16". (We recommend making as many inserts as you have different diameters of drum sanders, plus a couple extra to use for regular drilling.) Round the corners of the inserts to fit the opening (ours required a 5/8" radius).

5 Using the same router setup used in Step 3, rout the bottom side of each insert.

6 Measure the diameters of your sanding drums. Cut or bore a hole centered in each insert (F) *1/4" larger* than the measured diameters of the drums. The gap allows the dust to be vacuumed through.

Continued

Bill of Materials

Part	Finished Size T	M	L	Matl.	Qty.
TABLE					
A base	3/4"	11 1/2"	13"	BP	1
B right side	3/4"	3"	14"	BP	1
C left side	3/4"	3"	11 1/2"	BP	1
D front & back	3/4"	3"	9"	BP	2
E top	3/4"	14"	14"	BP	1
F inserts	3/4"	5 15/16"	5 15/16"	BP	3
G lever	3/4"	1"	11"	BP	1
FOOT PEDAL					
H pedal sides	3/4"	6"	12"	BP	2
I pedal	3/4"	6"	12"	BP	1
J cleat	3/8"	3/8"	6"	B	1
K cleat	3/4"	1 1/2"	7 5/8"	B	1
L cable blocks	1/2"	3/4"	1"	B	2

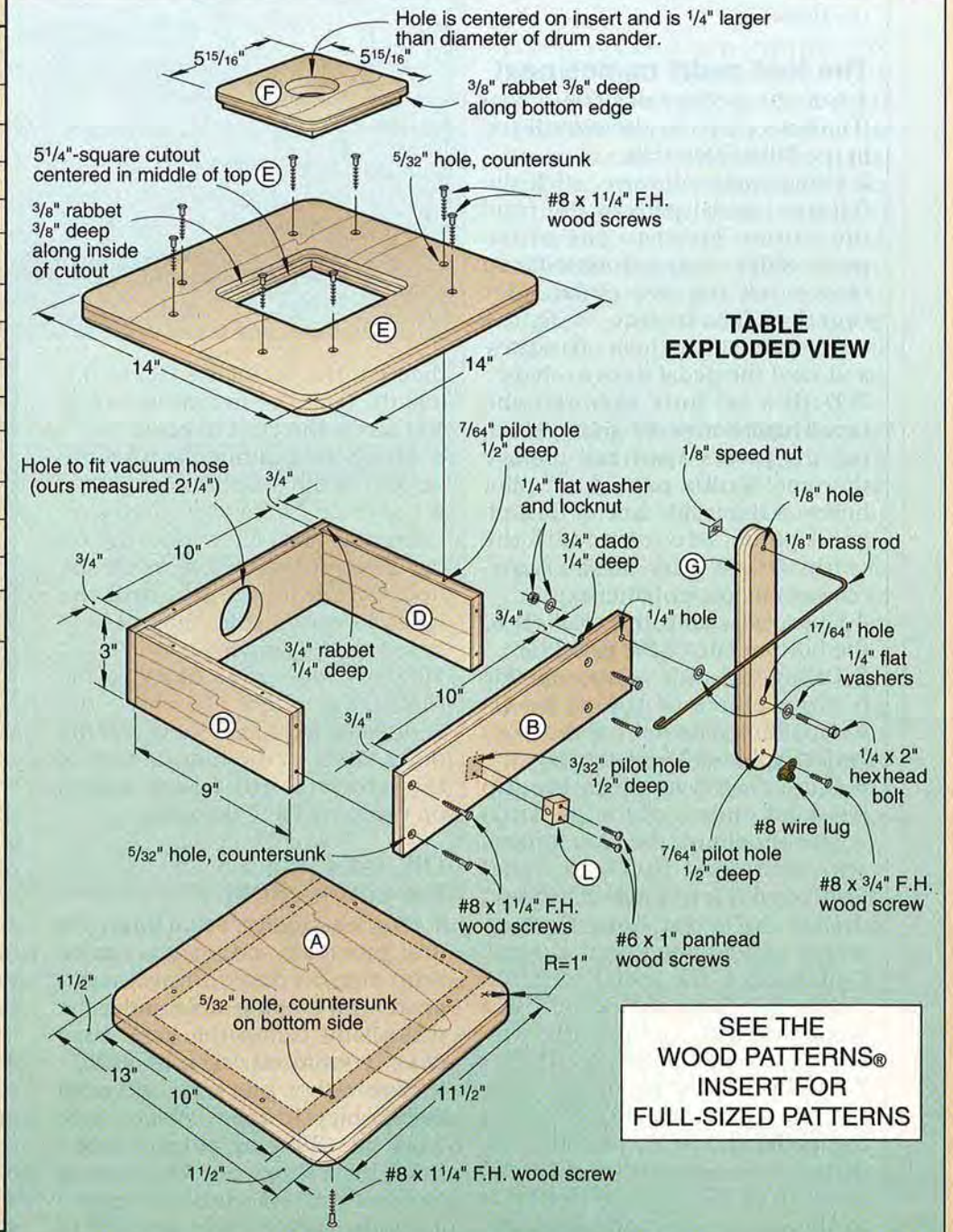
Materials Key: BP–Baltic birch plywood, B–birch.

Supplies: #6x1" panhead wood screws, #8x3/4" flathead wood screw, #8x1 1/4" flathead wood screws, #8x1 1/2" flathead wood screws, #8x2" flathead wood screws, 1/4" hexhead bolt 2" long with three flat washers and locknut, 2–1/4" lag bolt 2" long with four flat washers, 1/8" brass rod 14" long with 1/8" speed nut, 2–#8 wire lugs, 4 rubber feet, 54" of universal caliper brake cable, 3/8" plastic or metal clamp, clear finish.

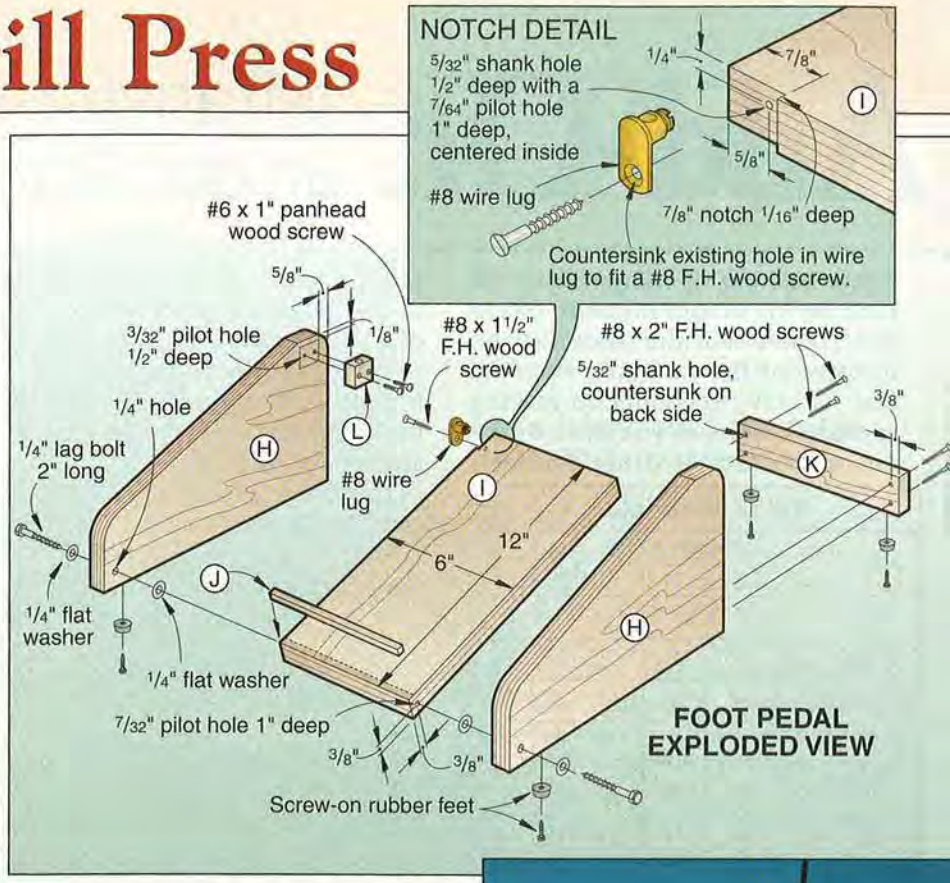
Buying Guide

Hardware kit. All the hardware in the Supplies listing *above* except for the finish. WOOD KIT™ DSTJ1, $19.95 plus $3.75 shipping. Schlabaugh and Sons Woodworking, 720 14th Street, Kalona, IA 52247 or call 800/346-9663 to order.

Ready-to-assembly kit. All the pieces listed in the hardware kit above, plus all the Baltic birch plywood and solid-wood pieces listed in the Bill of Materials cut to size and shape. WOOD KIT DSTJ2, $74.95 plus $12 shipping. Schlabaugh and Sons Woodworking, address and phone number above.



Deluxe Drill Press



Now, make the lever

1 Cut the lever (G) to the size and shape shown on the Parts View drawing on the pattern insert.
2 Mark the hole centerpoints where shown on the drawing. Drill the holes to the sizes noted.
3 Connect the lever to the box side (B) where shown on the Table Exploded View drawing.
4 Attach a wire lug to the bottom end of the lever where shown on the drawing.

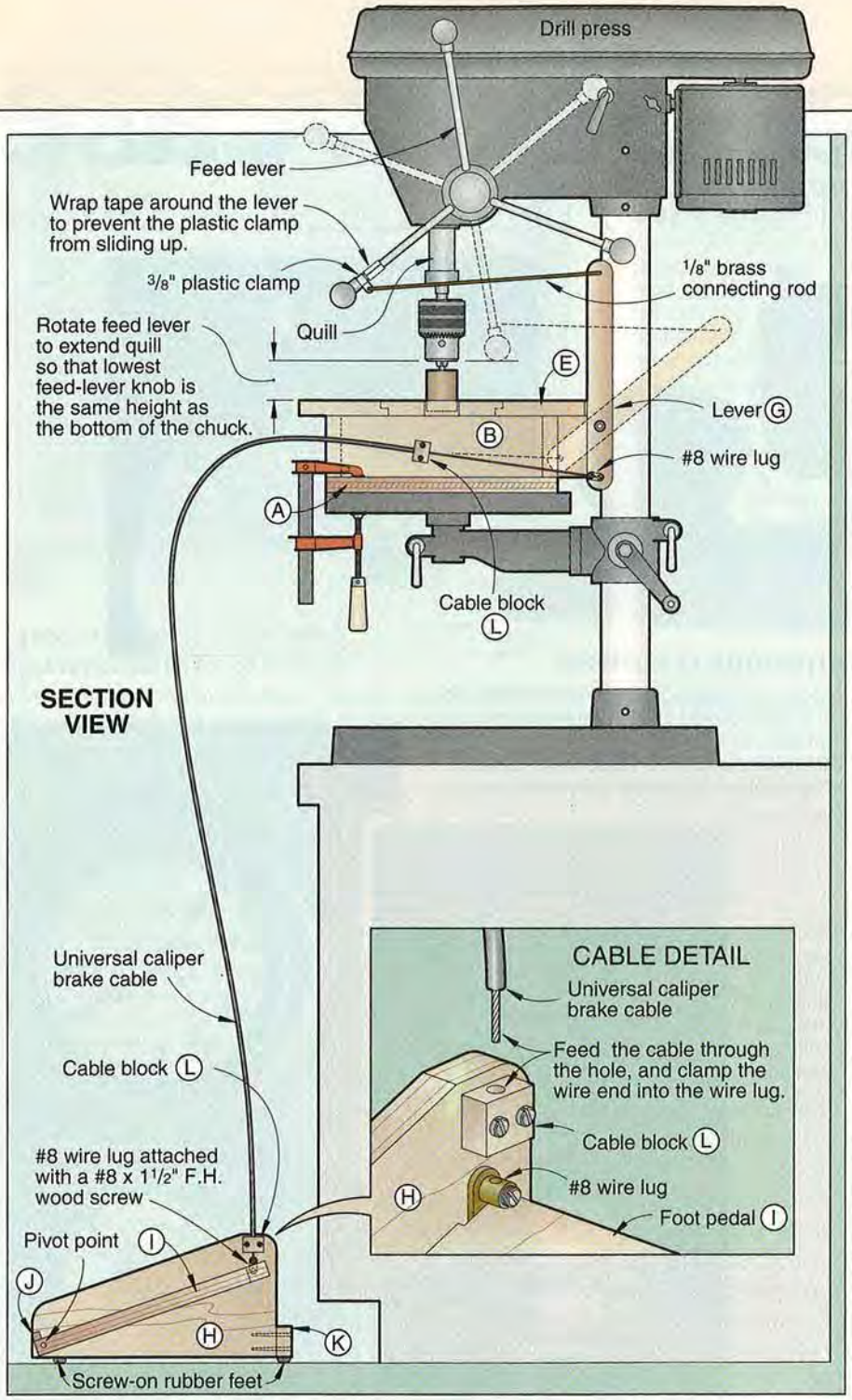
The foot pedal comes next

1 Cut the pedal sides (H), pedal (I), cleats (J, K) to the sizes listed in the Bill of Materials.
2 Using spray adhesive, stick the full-sized pedal pattern (H) from the pattern insert to one of the pedal sides. Using double-faced tape, stick the two pedal sides together face-to-face, with the edges and ends flush. Bandsaw and sand the pedal sides to shape.
3 Drill a ¼" hole through the taped-together pedal sides. Then, pry the pieces apart and remove the tape. Drill a pair of 3⁄32" pilot holes on the inside face of the left-hand pedal side for adding the cable block (L) later. Now, remove the paper pattern.
4 Glue and clamp the cleat (J) to the bottom end of the pedal (I).
5 Drill a 7⁄32" hole in the outside bottom edges of the pedal (I) where dimensioned on the Foot Pedal Exploded View drawing.
6 Cut a 1⁄16×7⁄8" notch in the top left-hand corner of the pedal (I) where shown on the Notch detail accompanying the Foot Pedal Exploded View drawing. Now, drill a 7⁄64" pilot hole 1" deep where dimensioned on the detail. Countersink the metal wire lug where shown on the detail. Use a wood screw to connect the wire lug to the pedal at the notch.
7 Use a pair of ¼" lag bolts 2" long to connect the pedal sides (H) to the pedal (I). Next, measure the distance across the front of the pedal from the outside face of H to the opposite outside face, and then cut the back cleat (K) to this length. Drill the mounting holes, and screw the cleat in place.
8 Attach four rubber feet to the bottom of the pedal assembly.
9 Cut the cable blocks (L) to size. Using the Parts View drawing on the insert for reference, mark the hole centerpoints, and drill the holes in each cable block where noted on the drawing.
10 Screw one cable block to the foot pedal where shown on the Foot Pedal Exploded View and the other block to the outside face of the table side (B) where shown on the Parts View drawing.

The foot pedal connects to the lever using a bicycle brake cable.

OK, let's make the connections

1 Chuck a sanding drum into your drill press. Fit your sanding table with the corresponding insert, center the sanding table under the drum, and clamp the table base (A) to your metal drill-press table.
2 Purchase a piece of universal caliper bicycle brake cable at least 54" long. (We purchased ours at a local bike shop. See the Buying Guide for a mail-order source.) Trim the inside cable portion to 54" in length, and trim the protective housing to 44" long.
3 Run the cable through the cable block (L) attached to the pedal side (H). See the Cable detail accompanying the Section View for reference. Now, attach the cable to the wire lug screwed to the pedal (I). Place the pedal on the floor.
4 Run the opposite end of the cable through the hole in the upper cable block attached to the table side (B). Then, attach the end of that cable to the wire lug secured to the lever so the lever is straight up and down. The lug on


Drill press
Feed lever
Wrap tape around the lever to prevent the plastic clamp from sliding up.
3/8" plastic clamp
1/8" brass connecting rod
Rotate feed lever to extend quill so that lowest feed-lever knob is the same height as the bottom of the chuck.
Quill
E
Lever G
B
#8 wire lug
A
Cable block L
SECTION VIEW
Universal caliper brake cable
Cable block L
#8 wire lug attached with a #8 x 1 1/2" F.H. wood screw
Pivot point I
J
H
K
Screw-on rubber feet
CABLE DETAIL
Universal caliper brake cable
Feed the cable through the hole, and clamp the wire end into the wire lug.
Cable block L
#8 wire lug
Foot pedal I
H

Connect the brass rod to the plastic clamp on the end of the feed lever.

the lever must not be secured too tightly—it must be able to swivel on the lever. The pedal should be in the full raised position when attaching the cable to the lever.

5 Take a 3/8" plastic clamp (available in the electrical section of your local hardware store), and attach it to the bottom forward feed lever on your drill press where shown on the Section View drawing *above*.

6 Bend a 14"-long piece of 1/8" brass rod to the shape shown on the Parts View drawing to form the brass connecting rod. Secure the connecting rod to the lever (G) with a 1/8" speed nut. Connect the opposite end of the connecting rod to a plastic clamp on the bottom-most feed lever as shown in the photo *above right*. Wrap tape around the feed lever to keep the clamp from sliding up the lever. Press down on the foot pedal to make sure the parts work in unison to pull the drill-press feed lever backward, lowering the drum sander. Release the pedal and the spring-loaded feed lever should pull the cable and lever forward, raising the pedal. Lubricate the cable lightly if necessary. You might also need to adjust the length of the brass rod. Raise the metal table on your drill press to the position shown on the Section View drawing. Now, depending on your particular drill press, the feed levers might come in contact with the table or workpiece on the table when rotating the feed levers. If so, follow the directions in Step 7 to correct this problem. If they do not come in contact, proceed to the note at the end of Step 7.

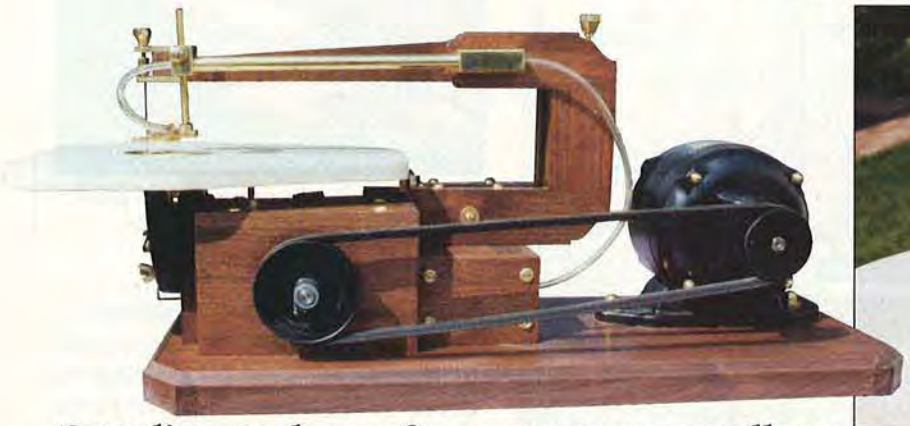
7 To prevent the metal feed lever from coming in contact with the tabletop (E) or workpiece (we found this happens on drill presses with long feed levers), extend the quill where shown on the Section View drawing, and hang onto the feed lever. Wrap tape around the bottom-most feed lever, and add the plastic clamp.

Note: *When sanding on the table, we found it best to depress the pedal slowly, lowering the sanding drum. Then, pull the workpiece away from the sanding drum, and release the foot pedal, allowing the drum to rise.*

Written by Marlen Kemmet
Project Design: James R. Downing
Illustrations: Kim Downing; Lorna Johnson
Photographs: Hetherington Photography

Project Showcase

We feature your best work



Canadian reader crafts a sumptuous scrollsaw

Canadian reader **Gerry McCudden** says our Collector's Series tools inspired him when he designed and built this sensational scrollsaw. The fully functional, brass-and-walnut beauty combines features from a number of commercial models, and boasts a Corian table that tilts both ways. Gerry, who hails from Regina, Saskatchewan, made the brass parts by hand, and added brass acorn nuts to dress up the washing-machine motor that powers the saw.

Historic clocks click for retired photographer

Retired commercial photographer **Bill Hopkins Sr.** of Des Moines, Iowa, took up woodworking 40 years ago with remodeling projects (including construction of his first darkroom). Later, he turned his skills to building and repairing clocks. For his 14"-tall, half-size Eli Terry pillar and scroll shelf clock (shown *right* in front of his full-sized version), he even made his own lock. Bill's 36" calendar clock *far right* is a replica of an 1868 model that was brought to him for repair.

Woodworkers bring reality to magical movie cupboard

In the movie *Indian in the Cupboard,* toy figures come to life when a boy locks them into an old cupboard. Asked by wishful lads to re-create the special cabinet, two readers spent hours viewing the video and drawing up plans. Retired accountant **Leslie Fontaine** of Weston, Ontario, built the one *left* for his six-year-old grandson, and **Don Hopkins** of Phoenix, Arizona, Chief Financial Officer of a redwood and cedar distributor, built the one *above left* for a seven-year-old neighbor. Neither woodworker mentioned whether his creation actually has demonstrated magical powers.

Print this article

Special piece of wood spawns server project

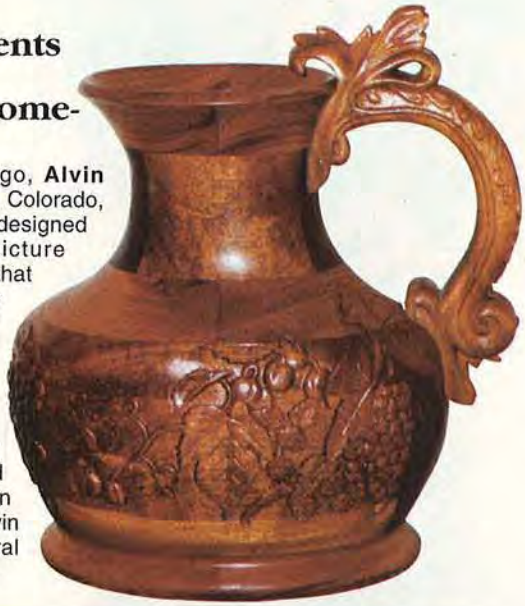
When **Roger Hoffman** spotted a figured maple board with a discolored streak at a lumberyard, he decided to combine it with some figured maple and quilted cherry he was saving in his shop for a special project. This two-door server, which now graces the dining room in Roger's Hamilton, New York, home, is the result. The retired biology professor added kingwood and maple inlays to the piece, which stands 36" tall (to the flat top) and is 37" wide.

Georgia carver strives for realistic colors and habitat

As a youngster **Frank White** lived a while on his grandparents' North Carolina farm, where he carved his own wooden toys and became interested in art and wildlife. Later, he established a taxidermy studio in Bishop, Georgia. Then, it was a short step to carving wooden fish (like the bluegills *below*) and wildfowl. For realism, Frank paints his carvings with iridescent taxidermy paints, and places them in lifelike habitats.

Carving accents oval forms turned on home-built lathe

About ten years ago, **Alvin Starck** of Berthoud, Colorado, read about a lathe designed for turning oval picture frames. He vowed that after retirement he would build a lathe for turning not just elliptical frames, but oval vases and other items, as well. This pitcher shows he reached that goal. And, as an added attraction, Alvin carves classical floral motifs on the pieces.



SHOW US YOUR STUFF

We'd like to see your best original work (but, no decks or other home improvements, please). Items built from kits or directly from published plans or patterns are ineligible, as are carvings done in classes or from roughouts. A project adapted from a plan or inspired by something you saw is OK. To submit your project for consideration:

- Send sharp color slides or glossy prints of the item. (We can't use Polaroids.) Include an overall view, plus any other angles or detail views necessary. Photos cannot be returned.
- Avoid cluttered or confusing backgrounds in photos. Include something to indicate function or scale, when appropriate.
- Even if it seems painfully obvious to you, explain what the project is or what it does—we don't want to call your lamp table a plant stand.
- Describe features, wood and finish used, overall dimensions, and anything else of interest.
- Tell us a little about yourself, too. Let us know how old you are, your occupation (or former one, if you're retired), how long you've been a woodworker, and so forth. Include a daytime phone number.
- Then send everything to:

***WOOD*® Magazine**
Project Showcase
1912 Grand Ave.
Des Moines, IA
50309-3379

Note: ***We cannot provide plans, drawings, patterns, measurements, bills of materials, instructions, or additional photographs, descriptions, or construction details for projects shown in this feature. Nor can we pass along addresses or telephone numbers of Project Showcase exhibitors.***

Roundtable

A terrific table from a few

Your lathe skills will get a workout building this terrific table—every part is turned.

Project Prep

Tools:
¾–1½" roughing gouge,
⅜" and ½" gouge,
¾" skew,
⅛–¼" parting tool,
½–1½" roundnose scraper.

Lathe equipment:
spur or cup drive center,
ball-bearing tail center,
3–4" faceplate.

Turn the spindle first

Draw diagonal lines to locate the centers on each end of a 3½×3½×26½" piece of mahogany. Mount the piece between centers, with a ball-bearing live center for the tailstock. Round it to about 3⅛" diameter (but not less than 3"), using a roughing gouge.

At the tailstock end, draw a mark 1¾" from the end of the workpiece. With the lathe running, hold a pencil at the mark to draw a line around the turning marking the bottom of the spindle (Line A on the Spindle Layout drawing).

With a parting tool, cut in to a diameter of 1⅛", slightly on the tailstock side of the line. Using a ⅜" gouge or a ¾" skew, establish a square shoulder at the line, and turn a 1⅛" diameter tenon to the end. (This is ⅛" larger than the finished tenon size.) Make the shoulder square or slightly concave so it will fit snugly against the base.

From this shoulder, measure 23¾" toward the headstock end. Draw a line there (Line B on the drawing), and turn a square shoulder and tenon. Turn both tenons to 1" diameter.

Now, referring to the Table Section View drawing in the *WOOD PATTERNS*® insert in the middle of the magazine, lay out the details at the bottom (tailstock end) of the spindle. To do that, start by measuring from the bottom shoulder of the spindle (Line A) to each of the first six detail lines on the illustration. Then, measuring from the shoulder at the base, draw the remaining detail lines, shown on the Spindle Layout drawing.

For the details bracketed as 1, rough in diameters ⅛" larger than the finished dimensions shown. Then, with a ⅜" gouge or ¾" skew, shape them to finished size. When measuring the finished diameters with calipers, turn off the lathe to prevent marring the wood. Sand with 120-, 220-, and 400-grit sandpaper.

Next, rough-in, finish-turn, and sand the transition between the bottom ornament and the central portion of the spindle (the area marked as 2). Do not turn the middle to the small diameter yet.

Move to the top (the headstock end), and lay out the details there. Turn and sand the ones marked 3.

Now, draw a line around the turning 14" from the base shoulder. With the parting tool, carefully cut in to 1¼" diameter at the line. To reduce drag on the side of the parting tool for this deep cut, gouge out a hollow centered on the kerf when you reach about an inch in depth. (Shown as the relief cut on the Spindle Layout drawing.) Shape the long curve (section 4) with a ½" gouge or a

skew. Check the diameters against the pattern at several points.

As you shape the central part of the spindle, particularly as you near the 1" finished diameter at the middle, the spindle may begin to vibrate and chatter. Light cuts with sharp tools will minimize this; scraping will make it worse. You can position a steady rest or place your free hand behind the workpiece to support it, too.

Sand the spindle's center section with progressively finer sandpapers. At each grit change, shut off the lathe and sand with the grain to minimize sanding marks.

Mark the turning and the drive center so you can remount the workpiece later in the same position. Remove the turning and the center from the lathe.

Build a base from discs

Bandsaw a 5½" disc and a 7½" one from 1"-thick mahogany as blanks for base discs B and C. Determine the best orientation for laminating them, and mark the mating faces.

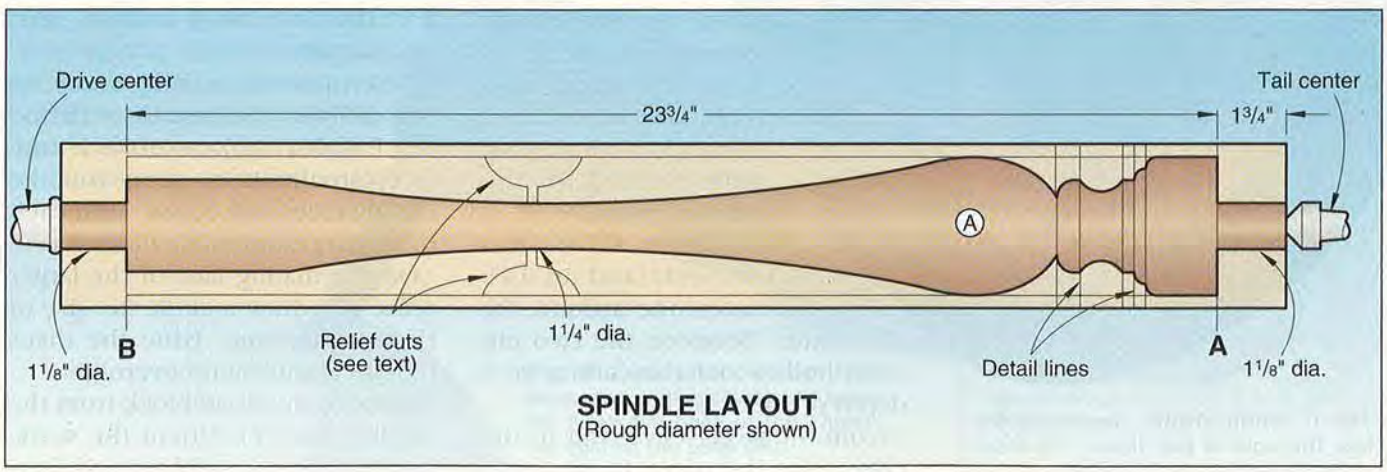
Attach a wasteblock about 1½" thick to a 3-4" faceplate. True the sides and face.

Adjust your compass to the same diameter as the wasteblock face and draw a circle centered on the unmarked face of the smaller disc. Glue the wasteblock to the blank inside the circle, as shown *below*. Cyanoacrylate adhesive (instant glue) will hold it tight while allowing easy removal later.

Turn the disc to 5" diameter, and flatten the face. A roundnose scraper does this well. For a good glue joint, a flat surface is essential. Check it with a steel rule or square. With the lathe running, sand with 120-grit abrasive folded around a piece of scrapwood about 1×2×6". Turn off the lathe, and sand the face with 220-grit and 400-grit papers, going with the grain. Check the face for flatness again, and dismount it.

Continued

Apply cyanoacrylate adhesive inside the marked circle on the blank. Mist the face of the wasteblock with accelerator, and bring the two pieces together.



SPINDLE LAYOUT
(Rough diameter shown)

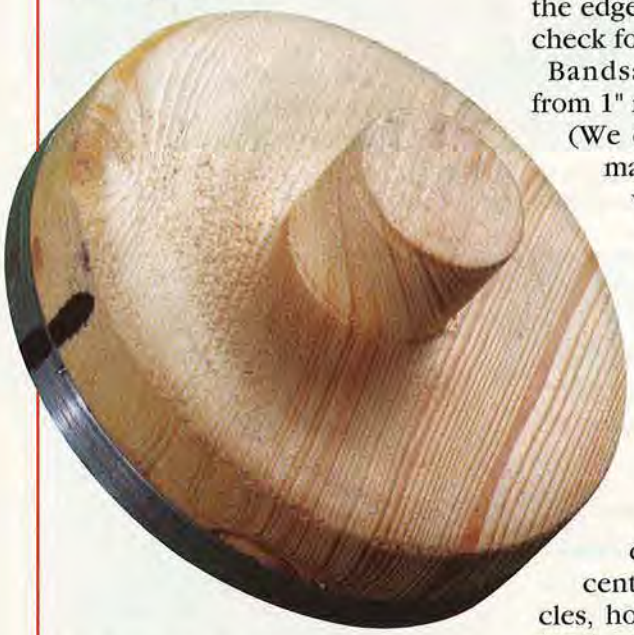
Mark the faceplate and wasteblock for orientation. Remove the faceplate from the turning

Make another wasteblock for the faceplate. Glue it to the unmarked face of the larger blank. Turn the disc to 7" diameter, flatten the face, and sand.

Draw a 5" circle centered on the disc. Glue the small blank inside it, using woodworker's glue. Clamp overnight. (The tailstock holds it effectively, *right*.)

Dismount the assembly. With a mallet and chisel, remove the wasteblock from the small disc, as shown *opposite page*. Save it to reuse later. Remount the faceplate with the workpiece attached. True the face of the small disc as you turn it to ¾" thick. Turn the edge profile. Sand, and check for flatness.

Install a drill chuck on the tailstock. With a 1" multi-spur or powerbore bit, bore through both discs. Remove the chuck and bit, and dismount the turning. With a chisel and mallet, separate the wasteblock-faceplate unit from the larger disc.



The 1" tenon on the jam chuck fits into the hole in the discs. The discs must fit snugly over the tenon.

The lathe serves as a clamp when gluing the base discs together. A plastic bag protects the toolrest and lathe bed from dripping glue squeeze-out.

Remount the wasteblock-faceplate unit on the lathe. Then, turn a tenon 1 1/16" in diameter and about 1" long, creating a jam chuck for completing the base discs (shown *left*).

Taking small cuts, fit the tenon on the jam chuck into the hole in the base discs (B and C). Press the laminated assembly onto the chuck with the large disc facing out. True the face of the large disc as you turn it to ¾" thick. Turn the edge profile shown. Sand, and check for flatness.

Bandsaw a 13"-diameter disc from 1" mahogany for base disc D. (We edge-glued two pieces to make wide stock.) Attach a wasteblock and faceplate to the bottom side of the blank, then mount the assembly on the lathe. True the face, and turn the disc to 12¾" diameter. Reduce your lathe's speed for the big disc.

Draw a 7"-diameter circle and an 11"-diameter one around the center. Between the two circles, hollow out the surface to a depth of about ⅜".

From the larger circle out to the edge, turn the piece to ¾" thick, then form the edge profile shown. Scribe a circle on the face the same diameter as your wasteblock, and dismount the turning.

Separate the wasteblock-faceplate from the back of the disc, and glue it inside the circle on the front. Remount the turning, and true the bottom surface. To ensure a wobble-free table, form a shallow hollow in the bottom from about 1" inside the edge to the center. Mark the center, then dismount the turning. Drill a 5/32" hole through the center, and countersink it on the bottom (the hollow side). Remove the wasteblock-faceplate unit from the disc.

It's time for the top

From 1"-thick mahogany, bandsaw a 9" disc for Part E and an 11½" one for part F.

Determine the mating faces, as you did with the base discs (B and C). Employing wasteblock-and-faceplate mounting again, true the mating faces and edges. Turn each to the largest possible diameter.

On the mating face of the larger piece (F), draw a circle the size of the smaller one. Glue the discs together, and clamp overnight.

Remove the wasteblock from the smaller disc (E). Mount the workpiece by the wasteblock and face-

plate on part F, and true the surface of E, bringing it to ¾" thick. Turn E to 8½" in diameter, then form its edge profile. Sand.

With a tailstock-mounted chuck and 1" bit, bore ¾" deep into the face of E. If your bit has a long pilot, grind it off; you don't want to go more than ¼" into part F.

Separate the workpiece from the wasteblock, leaving the wasteblock attached to the faceplate. On the end of the wasteblock, turn a tenon ¾" long to fit the hole in part E.

Mount the workpiece on the tenon, and bring up the tailstock to support it temporarily. Round the top (F) to 11", and turn it to ¾" thick, truing the face.

Work as far in toward the middle as the tailstock allows. Then, slide the tailstock out of the way and remove the waste at the center. Slide the tailstock back up to support the workpiece.

Shape the edge on part F. Here's the procedure: Cut a ¼" rabbet ¼" deep around the edge of the disc. On the back of the disc, draw a circle ½" from the outer edge. Form a cove from the edge to the line. Then, shape the bead around the edge. Sand, taking care to preserve the crisp edge at the top.

Now, hollow out the center of the top. Start by drawing a circle ½" inside the rabbet edge. With the tailstock still in place, form the hollow from the line toward the middle, using a ⅜" gouge. Cut ¼" deep.

Flatten the surface with a roundnose scraper. Slide the tailstock out of the way, cut away the supporting tenon, and flatten that area. Sand, backing the sandpaper with a foam pad for the curved edge. Finish-sand with the grain, and remove from the lathe.

Put the pieces together

Fit the tenons on the spindle into the top and base holes. If the tenons are too big, remount the spindle on the lathe, aligning the index marks, and sand the tenons to size.

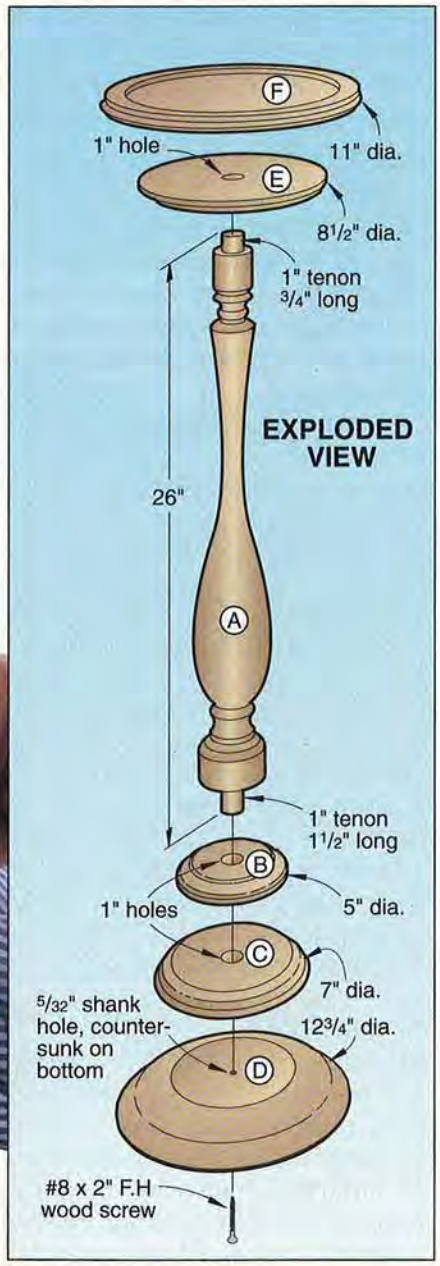
Then, with the corner of a parting tool, cut three small glue grooves around each tenon. Placement isn't critical; space them somewhat evenly along the length of the tenon.

Trim each tenon to length. Make the top one slightly shorter than the ¾" hole depth. The bottom one should fit flush with the bottom of discs B and C.

Apply glue to the top tenon, and press it into the hole in the turned top (parts E and F). Ensure that the spindle and top are perpendicular, and let the glue dry. Glue the bottom tenon into base discs B and C. Keep the discs perpendicular to the spindle.

Center base disc D on the bottom, and drill a 7/64" pilot hole through the center hole into the end of the tenon. Glue disc D to the base, and secure with a #8×2" flathead wood screw. Apply a clear finish overall.

Project Design: David Ashe
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: John Hetherington



Pop the wasteblock from the base disc with a chisel and mallet. Keep the back of the chisel flat against the base disc.

4 Can't-Fail Finishes

Make your woodworking really shine

Have you ever spent countless hours carefully constructing a project, only to have a mediocre finishing job detract from your fine craftsmanship? There's a good chance we can help.

Depending on the project, *WOOD*® project builders Jan Svec and Chuck Hedlund get great results using oil-based polyurethane, lacquer, penetrating oil, or water-based polyurethane. Each finish has properties suited for particular projects, as shown at *right*.

The two polyurethanes stand up to both wear and moisture, making them good choices for tabletops, toys, and other heavily used objects. Oil-based poly flows out more evenly than water-based, but it gives off more fumes and takes much longer to dry. The oil-type also imparts a golden tone that enhances the natural color of woods like pine, oak, and cherry.

Lacquer, while durable, works best on projects that won't receive heavy wear or exposure to moisture. Typically available in sprayable or aerosol form, it can cover large surfaces rapidly, as well as small, intricate parts. It dries quickly, so you can build up several coats in short order. Lacquer dries clear, letting wood's true color show through.

Penetrating oil goes on the easiest, but requires the most sanding preparation. Like lacquer, it's better suited to projects not exposed to heavy wear or moisture.

Water-based poly dries clear, so the wood's true color shows through. It cures hard, but lacks the resilience of oil-based finish.

While these four finishes vary, some finishing basics apply to all four. The following recommendations will help ensure a fine finish no matter which one you choose.

Brush up on the basics

• You can't rush a fine finish

Once the glue dries on an assembled project, many woodworkers feel the urge to get it finished quickly and put it into service. To achieve a fine finish, you need to fight this urge. Jan and Chuck, whose glassy-smooth finishes always draw rave reviews, consider a project at the finishing stage only about two-thirds complete.

• Plan ahead

Just as they plan a project's cutting and assembly steps, Jan and Chuck plan the finishing stage as well. Some pieces, such as inside drawer surfaces, or intricate moldings receive a finish sanding ***before*** assembly. In even harder-to-reach areas, mating surfaces get masked off with tape and the finish applied prior to glue-up. To sand round knobs and drawer pulls, our builders simply chuck them in a drill press, then apply finish before installing these parts.

• Clean up glue squeeze-out

During assembly, clean up excess glue squeeze-out to save yourself some additional sanding and avoid finishing problems. You should wipe off excess glue immediately with a wet rag, and rinse the rag often so glue residue doesn't build up. You also can let the glue dry slightly, then scrape off the surplus with a cabinet scraper before it hardens.

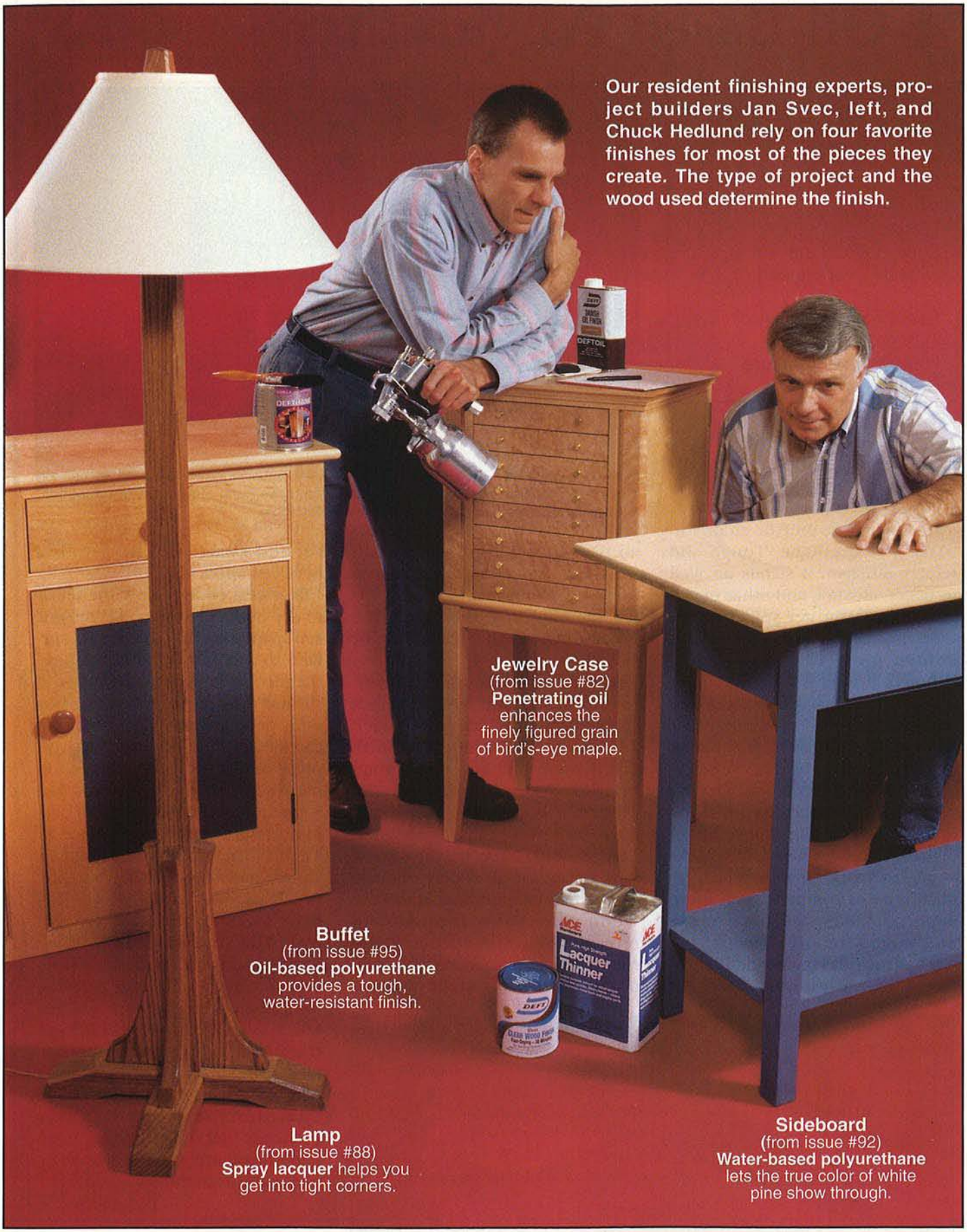
• Don't scrimp on sanding

While random-orbit sanders have made sanding less painful, there's still no substitute for hand sanding. Use a firm sanding block, such as a cork-faced piece of wood, to keep workpiece edges crisp and prevent streaks caused by fingertip pressure.

• Control your environment

Apply your finishes in a clean, well-ventilated environment. Airborne dust raises havoc with trying to achieve a smooth finish. Finish fumes pose health risks if breathed and can ignite if exposed to a spark or flame, such as a pilot flame. Note, too, that faster-drying finishes are less apt to collect dust.

Continued


Our resident finishing experts, project builders Jan Svec, left, and Chuck Hedlund rely on four favorite finishes for most of the pieces they create. The type of project and the wood used determine the finish.
DEFTOIL
Jewelry Case
(from issue #82)
Penetrating oil
enhances the
finely figured grain
of bird's-eye maple.
Buffet
(from issue #95)
Oil-based polyurethane
provides a tough,
water-resistant finish.
ACE
Lacquer
Thinner
Lamp
(from issue #88)
Spray lacquer helps you
get into tight corners.
Sideboard
(from issue #92)
Water-based polyurethane
lets the true color of white
pine show through.

1 Oil-Based Polyurethane

Pros:
Water and alcohol resistant
Resilient
Resists wear

Cons:
Long-drying time
Difficult to apply and repair

Ideal for:
Tabletops
Heavily used furniture
Children's toys

Once dry, oil-based polyurethane finishes, like those here, offer years of protection. Choose between gloss and satin for the desired look.

Tough stuff for a hard, long-lasting shine

For a heavily used surface such as a casual dining room tabletop, nothing works better than oil-based polyurethane. Tough and scratch-resistant, it stands up well to water, alcohol, and other beverages that might get spilled on it. Clear polyurethane gives a warm, golden glow to most woods, although a number of companies sell polyurethane with stain mixed into it.

Jan and Chuck use a number of brands with similar success although Minwax's Fast-Drying Polyurethane shortens finishing time. A long drying time—one of oil-based poly's biggest drawbacks—makes working in a relatively dust-free environment even more important, since dust has a longer time to settle onto a project.

Preparation. Finish-sand the surface with 180-grit sandpaper, but no finer than 220-grit since a surface that's too smooth will cause bonding problems. Vacuum off the sanding dust, then wipe the piece down with a clean rag or tack cloth.

Application. You can use a poly-foam brush, but Jan prefers a "good" natural bristle brush. Such a brush costs $10–20, lays finish down smoothly, and won't shed bristles. For small or intricate pieces, oil-based polyurethane comes in aerosol cans.

First coat. Even if you want a satin finish, use gloss polyurethane on the first coat because it lets the wood grain show through and reveals uneven spots better. It also rubs out easier than satin. If you put it down over stain, apply a second coat, with no sanding between applications.

Between coats. Allow the finish to dry overnight, then use 220-grit sandpaper to rub the entire surface to a uniform dullness. Wipe the piece with a clean dry cloth.

Final treatment. Apply gloss or satin polyurethane, depending on the desired finish, and let the piece dry for a couple of days. On flat surfaces such as tabletops, Jan sometimes lightly drags a dull cabinet scraper across the surface to knock off the dust bumps, as shown at *lower left*. Buff out the finish using a white 3M Scotch-Brite 7445 light-duty cleansing pad. You can set your random-orbit sander on the Scotch-Brite pad and apply only light pressure to speed up the buffing process. For a mirror-like finish, buff out the finish using an automotive-type polishing compound and a power buffer.

Maintenance. Minor surface scratches buff out easily, but deep gouges require sanding and reapplying finish to the entire surface.

2 Spray Lacquer

Pros:
Fast drying
Builds quickly
Easily repaired

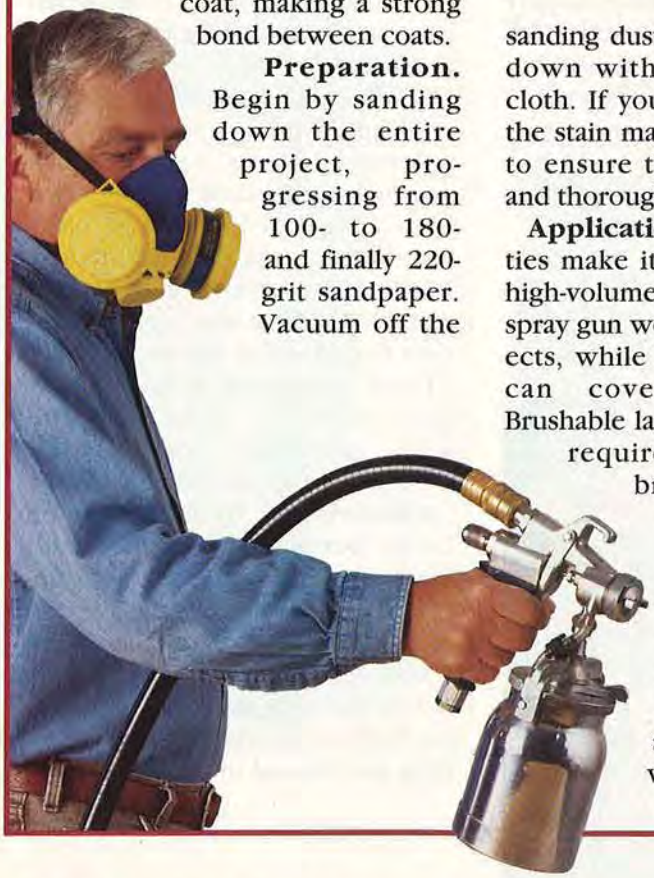
Cons:
Not water resistant
Contains highly volatile solvents

Ideal for:
Furniture (except tabletops)
Decorative wood projects

Though lacquer can be brushed on, pros prefer spraying on the finish because of the quicker drying time. They typically can apply several coats in a day.

Speed and sprayability—lacquer's strong suits

When you're working against a deadline, reach for quick-drying lacquer. The solvents in lacquer, primarily acetone, evaporate quickly, allowing you to apply four or more coats of finish in a single day. These solvents slightly dissolve the previous coat, making a strong bond between coats.



Preparation. Begin by sanding down the entire project, progressing from 100- to 180- and finally 220-grit sandpaper. Vacuum off the sanding dust, then wipe the piece down with a clean rag or tack cloth. If you apply a stain, follow the stain manufacturer's directions to ensure the stain dries evenly and thoroughly.

Application. Lacquer's properties make it ideal for spraying. A high-volume, low-pressure (HVLP) spray gun works well for large projects, while lacquer in spray cans can cover small projects. Brushable lacquers dry slower, but require you to use natural bristle brush since the solvents in lacquer can dissolve synthetic bristle and poly-foam brushes. Whether you spray it or brush it, wear an approved respirator and work in a well-ventilated area.

First coat. Apply a heavy, wet coat and allow it to dry. On stained surfaces, Chuck likes to apply a second coat as soon as the first coat dries.

Between coats. Sand lightly between coats with 320-grit sandpaper, to knock off the high spots, then wipe the surface with a clean dry cloth. Normally, Chuck gives most projects three coats.

Final treatment. Generally, a light buffing takes care of any surface blemishes, although rubbing out lacquer with polishing compounds produces a mirror-like sheen people will want to touch.

Maintenance. To remove scratches, buff or lightly rub them with lacquer thinner, then recoat and rub out the finish to match the surrounding area. On stained wood, be careful not to sand down to bare wood.

Continued

3 Penetrating Oil

Pros:
Easy to apply and repair
Enhances figured wood grain

Cons:
Not water resistant
Bleeds on open-grained wood

Ideal for:
Fine furniture not exposed to wear
Decorative wood projects

Penetrating oils, like those above, work well with tight-grained woods. In addition, they require fewer coats than the other three finishes.

Choose penetrating oil for fine furniture or figured grain

Nothing matches a hand-rubbed oil finish for putting a warm glow on a piece of fine furniture. Penetrating oil brings out the highlights in wood and enhances the figure of the grain. Although well-suited to tight-grained woods such as maple, cherry, and walnut, penetrating oil tends to bleed back out of the deep pores of oak. It lacks the durability of the other finishes, but makes up for it in the ease of application and maintenance.

Brands such as Minwax Antique Oil Finish, Deft-Oil, Penofin Oil, and Watco Danish Oil come in clear or several darker shades. Jan prefers the Minwax oil because it takes only two coats to build up a finish while the others require three or more.

Preparation. Oil finishes require the most sanding preparation. Progress through 220-grit sandpaper, then go back over the piece with 320-grit or finer as shown *below*. Vacuum off the sanding dust, then wipe the piece down with a clean rag or tack cloth.

Application. Use a bristle or poly-foam brush to apply the oil to the wood. Small parts can be dipped in a container of finish.

First coat. Lay on the oil. When it just starts to feel tacky, wipe off the excess with a clean, lint-free cotton rag. If it dries too quickly, reoil lightly, then wipe clean.

Between coats. Let the finish dry overnight, then rub it down with a gray 3M Scotch-Brite ultra-fine abrasive pad. Rub with the grain to prevent cross-grain scratches. Wipe the piece clean, then reapply oil as before.

Final treatment. When the second coat dries, buff the finish with a soft, clean cloth. For added luster, apply paste wax, then polish.

Maintenance. To maintain an oil finish, periodically recoat it with the same oil originally used to finish the piece. This replenishes the surface and hides scratches. Wipe waxed finishes with mineral spirits before applying more oil. Dirty finish can be removed using a Scotch-Brite pad dipped in oil finish.

4 Water-Based Polyurethane

Pros:
Tough and durable
Water resistant
Soap and water clean
No fumes

Cons:
Difficult to apply evenly
Raises grain of wood

Ideal for:
Furniture
Floors
Toys
Applying indoors

Water-based polyurethane, while it raises grain during application, will not alter the look of wood. Fumes pose no problems and cleanup can be done with water.

Water-based poly dries fast, for true colors, few fumes

While well-suited for many of the same projects as its oil-based cousin, water-based polyurethane has very different properties. First, it dries clear so the color of the wood will not yellow, as illustrated by the pine sideboard on *page 46.*

Because it contains water, this finish raises the wood grain. To minimize grain raising, wipe down the piece with a wet rag, letting it dry; sand off the raised grain.

Water-based polyurethane dries much faster than oil-based poly, but this makes it harder to brush out evenly. Its water composition also requires that you use only synthetic abrasive pads, since the particles left behind by steel wool rust and leave dark stains in the wood.

Finally, water-based polyurethane is low on fumes and cleans up with water, making it a good choice for shops where adequate ventilation for solvent-based finishes presents a problem. Our project builders have achieved good results applying Carver Tripp's Safe and Simple Clear Poly and Minwax Polycrylic with a brush.

Preparation. Finish-sand with 220-grit, wipe the project with a wet rag or sponge, and allow it to dry. Sand just enough with 220-grit to remove the raised grain.

Application. Brush water-based poly on in thin coats using a quality synthetic bristle brush. Some brands work with a HVLP sprayer, but follow can directions for thinning information.

First coat. Apply a thin coat and don't over-brush it. If you get foaming, dab it up with a clean cloth, then brush out any marks.

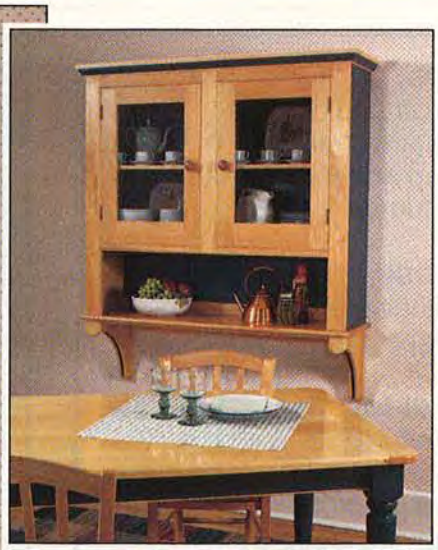
Between coats. After the first coat cures, sand lightly with 220-grit sandpaper to remove any raised grain. Vacuum off the sanding dust, then wipe the piece down with a water-dampened rag.

Final treatment. Apply a second thin coat and repeat the steps above. After a final application, allow the finish to cure, then buff it out with a white Scotch-Brite pad and/or polishing compound.

Maintenance. Minor surface scratches will buff out, but deep scratches mean sanding and reapplying finish to the entire workpiece surface.

Written by Kerry Gibson with Jan Svec and Chuck Hedlund
Photographs: Studio Au, John Hetherington

COUNTRY BUFFET



Here's the matching cupboard we promised you for the country buffet we featured in the February 1997 issue (#95). The project looks terrific sitting atop the buffet or alone hanging on a wall.

Both of these projects complement the table we ran in the August 1996 issue (#89). If you want a whole roomful of this style of furniture, you now have everything you need to get started.

Let's start with the carcase

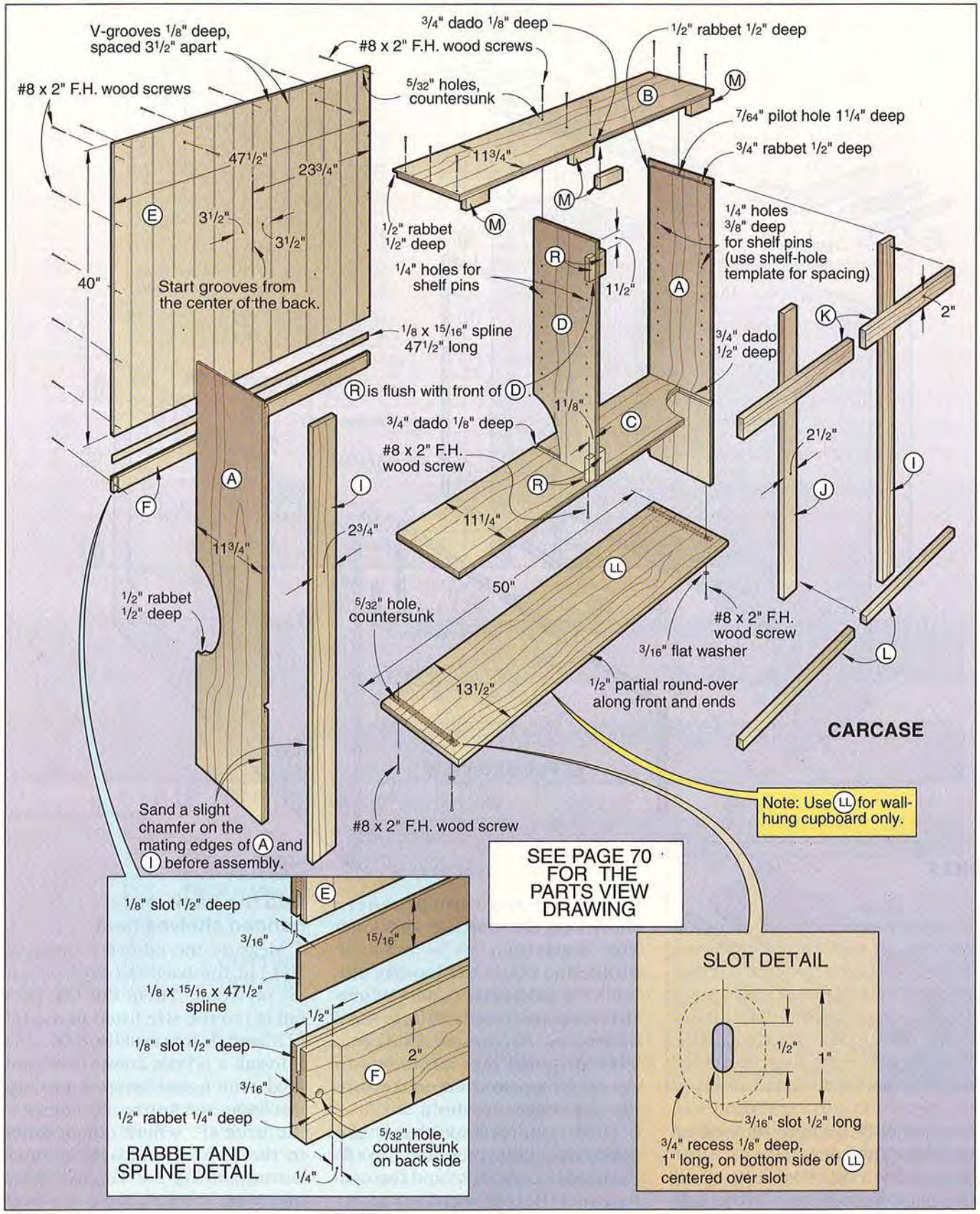
1 From ¾" birch plywood, cut the carcase sides (A), top (B), bottom (C), and center panel (D) to the sizes listed in the Bill of Materials.

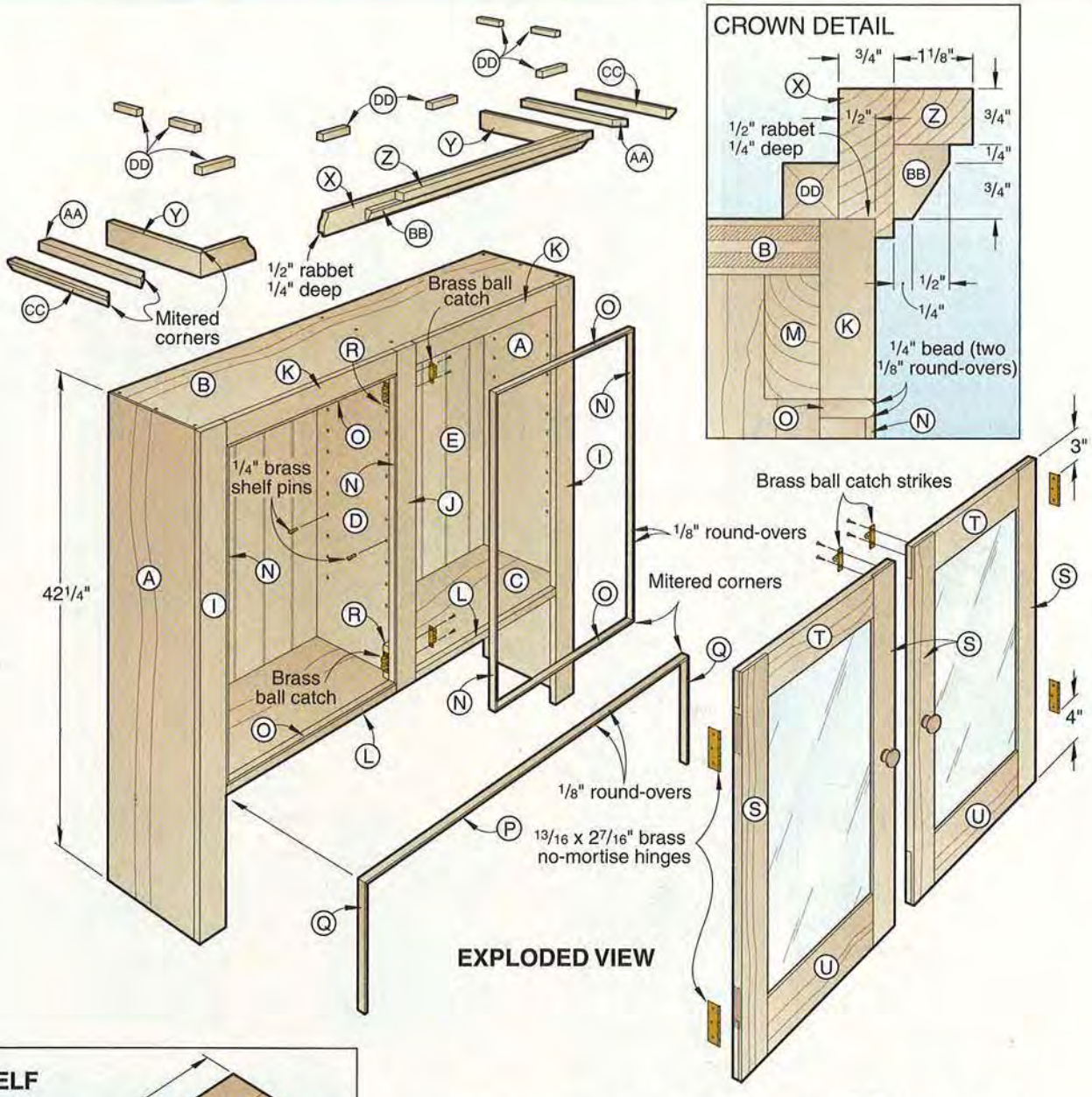
2 Install a dado head in your tablesaw. Test-cut scrap stock to verify the width of cut. Use shims between the dado cutters if necessary so the width of cut matches the exact thickness of your plywood. Once verified, cut ½"-deep dadoes and rabbets in the sides (A) where shown on the Carcase drawing *at right* and where dimensioned on the Parts View drawing on *page 70.*

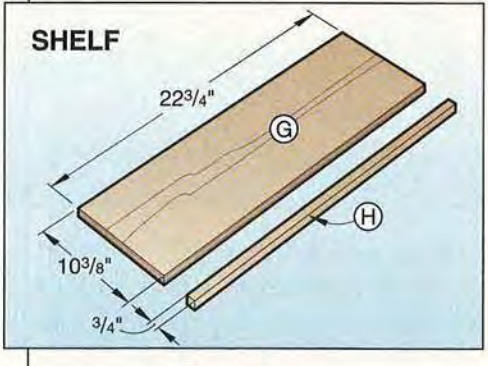
3 Measure and mark carefully, then cut ⅛"-deep dadoes on the *bottom* surface of the top panel (B) and the *top* surface of the bot-

Continued

& CUPBOARD-Part2


V-grooves 1/8" deep, spaced 3 1/2" apart
#8 x 2" F.H. wood screws
#8 x 2" F.H. wood screws
5/32" holes, countersunk
3/4" dado 1/8" deep
1/2" rabbet 1/2" deep
7/64" pilot hole 1 1/4" deep
3/4" rabbet 1/2" deep
47 1/2"
23 3/4"
11 3/4"
3 1/2"
3 1/2"
3 1/2"
40"
Start grooves from the center of the back.
1/2" rabbet 1/2" deep
1/4" holes for shelf pins
1/4" holes 3/8" deep for shelf pins (use shelf-hole template for spacing)
1 1/2"
1/8 x 15/16" spline 47 1/2" long
R is flush with front of D.
3/4" dado 1/2" deep
2"
1 1/8"
3/4" dado 1/8" deep
#8 x 2" F.H. wood screw
2 1/2"
11 1/4"
2 3/4"
11 3/4"
50"
1/2" rabbet 1/2" deep
5/32" hole, countersunk
#8 x 2" F.H. wood screw
3/16" flat washer
13 1/2"
1/2" partial round-over along front and ends
CARCASE
Note: Use LL for wall-hung cupboard only.
Sand a slight chamfer on the mating edges of A and I before assembly.
#8 x 2" F.H. wood screw
SEE PAGE 70 FOR THE PARTS VIEW DRAWING
1/8" slot 1/2" deep
3/16"
15/16"
1/8 x 15/16 x 47 1/2" spline
1/2"
1/8" slot 1/2" deep
2"
3/16"
1/2" rabbet 1/4" deep
5/32" hole, countersunk on back side
1/4"
RABBET AND SPLINE DETAIL
SLOT DETAIL
1/2"
1"
3/16" slot 1/2" long
3/4" recess 1/8" deep, 1" long, on bottom side of LL centered over slot





tom panel (C) where located on the Parts View drawing.

4 Cut a ½" rabbet ½" deep along the back inside edge of the side panels (A) and top (B) where shown on the Carcase and Parts View drawings.

5 Glue and clamp the top (B), bottom (C), and center panel (D) into their respective rabbets and dadoes in the carcase sides (A). Take diagonal measurements to check for square, and make sure the front edges are flush.

6 Drill countersunk shank and pilot holes, and screw the top (B) to the side panels (A) and the center panel (D) to B and C.

Add the back and banded shelves next

1 Measure the rabbeted opening, and cut the back (E) to size from ½" plywood. Then, cut the back rail (F) to the size listed in the Bill of Materials from solid stock.

2 Install a ⅛" slot cutter in a handheld router, and adjust it to cut a slot centered in the thickness of the back (E) where dimensioned in the Rabbet and Spline detail accompanying the Carcase drawing. Now, working from the *back*

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
CARCASE					
A sides	¾"	11¾"	42¼"	BP	2
B top	¾"	11¾"	47½"	BP	1
C bottom	¾"	11¼"	47½"	BP	1
D center panel	¾"	11¼"	29¼"	BP	1
E back	½"	47½"	40"	BP	1
F back rail	¾"	2"	47½"	M	1
G shelves	¾"	10⅜"	22¾"	BP	2
H shelf banding	¾"	¾"	22¾"	M	2
FACE FRAME					
I side stiles	¾"	2¾"	42¼"	M	2
J center stile	¾"	2½"	30½"	M	1
K top rails	¾"	2"	20"	M	2
L bottom rails	¾"	¾"	20"	M	2
M glue blocks	¾"	1¼"	4"	M	4

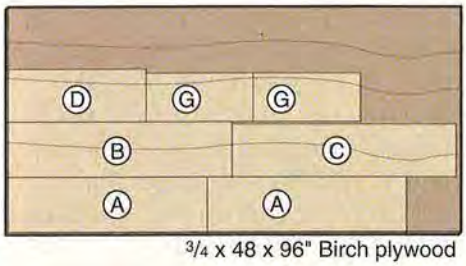
Part	Finished Size T	W	L	Matl.	Qty.
BEADING					
N* upper vert. bead	¼"	¾"	27¾"	M	4
O* upper horz. bead	¼"	¾"	20"	M	4
P* lower horz. bead	¼"	¾"	42½"	M	1
Q* lower vert. bead	¼"	¾"	11¾"	M	2
R catch blocks	¾"	1⅛"	3"	M	4
DOORS					
S stiles	¾"	3"	27⅛"	M	4
T upper rails	¾"	3"	19⅜"	M	2
U lower rails	¾"	4"	19⅜"	M	2
V vert. stops	⅜"	½"	21⅛"	M	4
W horz. stops	⅜"	½"	13⅜"	M	4
CROWN					
X* vert. front	¾"	2"	48½"	M	1
Y* vert. sides	¾"	2"	12¾"	M	2

Part	Finished Size T	W	L	Matl.	Qty.
Z* horizontal front	¾"	1⅛"	50¾"	M	1
AA* horizontal sides	¾"	1⅛"	13⅞"	M	2
BB* molding front	¾"	1"	50"	M	1
CC* molding sides	¾"	1"	13½"	M	2
DD glue blocks	¾"	¾"	3"	M	8

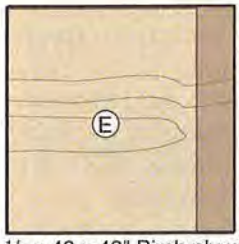
*Initially cut parts marked with an * oversized. Then, trim to finished size according to the how-to instructions.

Materials Key: BP–birch plywood, M–maple

Supplies: #8×2" flathead wood screws; 2 pair of 13/16×27/16" no-mortise brass or statuary bronze hinges; 2 pair of 111/16×5/16" adjustable brass ball catches with strikes; 2–1¾"-diameter Shaker knobs; ¼" brass shelf pins; #17×1" wire brads, single-strength glass, primer and enamel paint, clear finish.



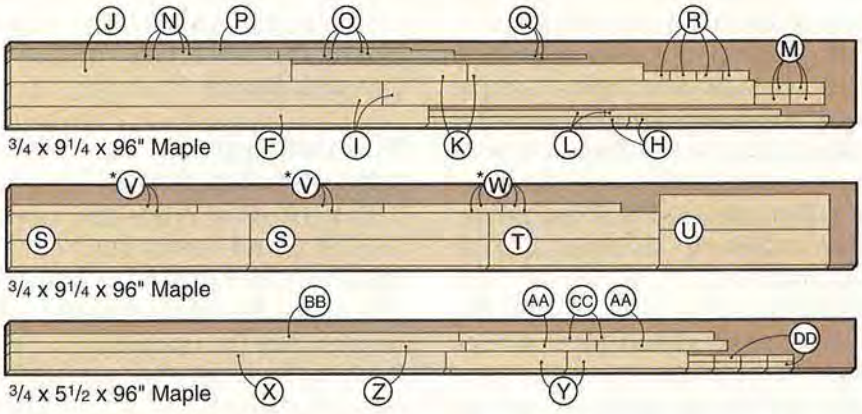
¾ x 48 x 96" Birch plywood



½ x 48 x 48" Birch plywood

*Plane or resaw to thickness listed in the Bill of Materials.

CUTTING DIAGRAM



side of the back (E) and rail (F), rout a ⅛" slot ½" deep.

3 Using a straightedge and working from the center out, mark the locations of the V-grooves on the front of the back (E) 3½" on center where shown on the Carcase drawing. Chuck a 90° V-groove bit into a handheld router, and adjust it to cut ⅛" deep. Measure from the edge of the router base to the center of the bit, and cut a scrap of wood to this dimension. Use this block as a spacer to position the straightedge the proper distance from each marked line, and rout the grooves as shown in the photo on the *following page.*

4 Cut ½"-wide rabbets ¼" deep across the front face of the ends of the back rail (F).

5 Cut a 15/16×47½" spline from ⅛" hardboard, and use it to assemble the back rail (F) to the bottom edge of the back (E) where shown on the Rabbet and Spline detail. This assembly will *not* be glued together until after the finish is applied. Clamp the back/back rail assembly into the rabbet in the back of the carcase. Drill countersunk shank holes through the back and into the carcase and secure with wood screws.

Continued

Use a straightedge as a guide to rout the decorative grooves in the plywood back. A spacer block is used to position the straightedge from the marked lines.

6 Cut the adjustable shelves (G) from ¾" plywood and the shelf banding (H) from solid stock. Glue and clamp the banding to the shelves, and scrape and sand the banding flush.

Next, build the face frame

1 Cut the side stiles (I) and center stile (J) to size. Sand a slight chamfer on the mating edges of the sides (A) and side stiles (I) where shown on the Carcase drawing.
2 Dry-clamp (no glue) the side stiles (I) and center stile (J) to the cabinet, keeping the outside edges of the side stiles flush with the outside surfaces of the sides (A). Trim the stiles if necessary. Glue and clamp the stiles (I, J) to the carcase.
3 Cut the top rails (K) and the bottom rails (L) to size. Check their fit between the stiles, and glue and clamp them to the carcase. The top edges of the top rails should be flush with the top surface of the top panel (B).
4 Cut the glue blocks (M) to size, and glue them in place.
5 Cut to shape the Shelf-Hole Template shown on the Parts View drawing on *page 70*. Drill the ¼" holes through the template where dimensioned. Then, use the template to drill the ⅜"-deep shelf-pin holes in the sides and divider. (We used a stop on our bit for consistent depths.)

Add the decorative maple beading

1 From the edge of ¾" maple, rip ¼"-wide strips for the beading (N, O, P, Q) to the sizes listed in the Bill of Materials plus 2" in length.
2 Install a ⅛" round-over bit into your table-mounted router, and position the router-table fence flush with the edge of the pilot bearing. Then, rout the front edges of each strip, using a feather board for safety and to ensure consistent round-overs.
3 Sand a slight chamfer along the front edges of the face frame members that will receive the beading (N, O, P, Q). Miter-cut the beading strips to length, and glue and clamp them to the face frame where shown on the Exploded View drawing.
4 Cut the catch blocks (R) to size, and glue and clamp them in place on the back side of the center stile (J) where shown on the Carcase drawing. Later, you'll mount the brass ball catches to the catch blocks.

Machine a pair of glass-paneled doors

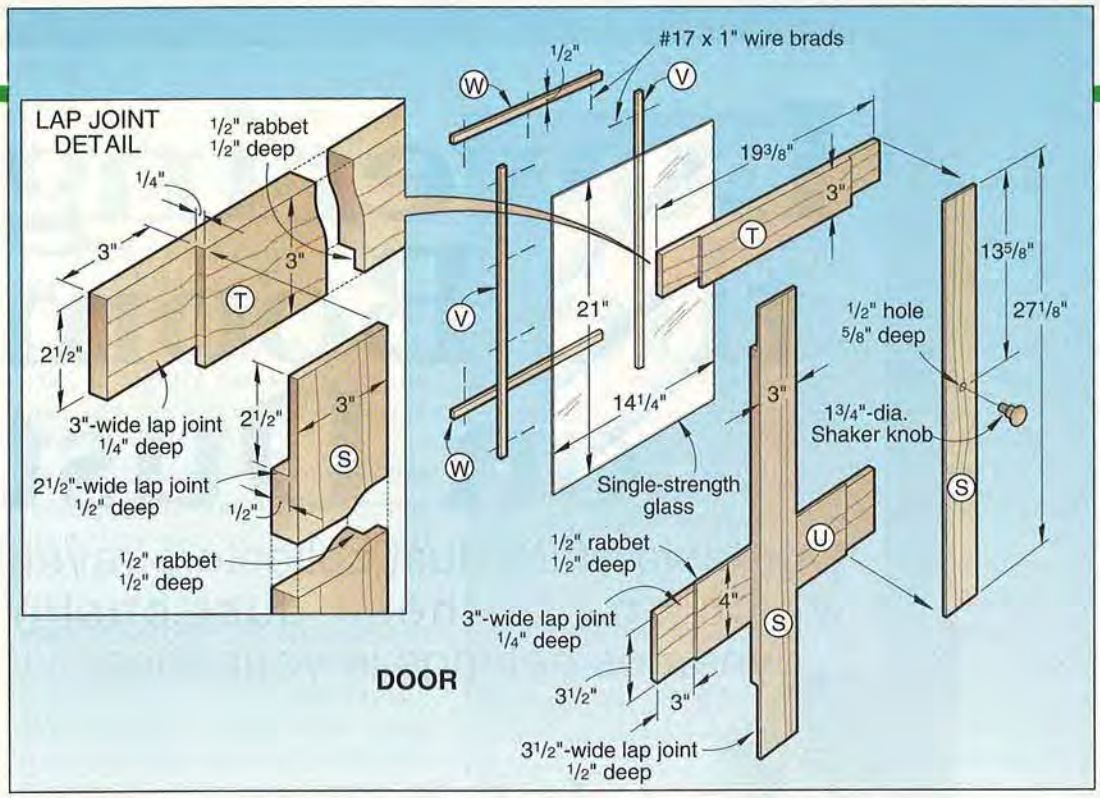
1 Cut the door stiles (S), upper rails (T), and lower rails (U) to size. Lay out the parts to form the two doors. The door should be ⅛" smaller than the opening.
2 Mark the front face and inside edge of each stile and rail. Then, cut ½" rabbets ½" deep along the inside *back* edge of each piece.
3 Cut mating lap joints across the ends of the stiles and rails to the sizes noted on the Door drawing and accompanying Lap Joint detail. (We used our tablesaw.)
4 Glue and clamp the stiles and rails together for each door. Check for square, and set on a flat surface to dry.
5 Mark the knob-hole centerpoint on each door. Measure the diameter of the tenon on your Shaker knob (they can vary in size), and drill the mounting hole.
6 Measure the rabbeted opening, and have single-strength glass cut to size minus ⅛" in each direction.
7 Cut the stops (V, W) to size. Drill pilot holes through the stops, and temporarily install the stops and glass panels to check the fit. Remove the stops and glass; you'll finish the doors and stops before nailing the stops in place.
8 Install the doors using the no-mortise hinges. See the Exploded View drawing for hinge locations. Attach the catches and strikes.

Top things off with some decorative crown molding

1 Cut the crown molding pieces (X, Y, Z, AA, BB, CC) to the sizes listed in the Bill of Materials plus 1" in length.
2 Cut ½" rabbets ¼" deep in pieces X and Y where shown on the Crown detail accompanying the Exploded View drawing. Miter-cut pieces X and Y to length. Then, glue and clamp them to the top of the carcase.
3 Miter-cut pieces Z and AA to length. Glue and clamp them to X and Y, with the top edges flush.
4 Miter-cut the crown molding front (BB) and sides (CC). Check the fit, but do not glue them in place. They're attached after they've been painted.
5 To reinforce the bond between the crown and the top of the carcase, cut the glue blocks (DD) to size, and glue them in place.

Finishing and final assembly

1 Remove the shelves, back/back rail (E/F), doors, hinges, and catches. Separate the back from the back rail.
2 Sand everything to 220-grit. (We sanded the knobs by chucking them into a drill press.)
3 Mask the carcase sides from the face frame and the crown. Mask a



Note: *For use directly on top of the buffet, the construction for the cupboard is now complete. Continue with the next section for the finishing instructions. But, if the cupboard is going to hang on the wall, see the Bill of Materials, Cutting Diagram, and Exploded View drawing on page 72 for the plans to build the sturdy bracket and shelf used to support the wall-hung cupboard.*

¾" strip where the crown molding (BB, CC) will be glued in place later.

4 Apply a clear finish to the inside of the carcase and face frame (just to the sanded chamfer at the joint between the stile and side panel). Add finish to the back rail, door frames and stops, knobs, and adjustable shelves. (We used Minwax Fast-Drying Gloss Polyurethane for the first coat, sanded it with 220-grit sandpaper, and used satin polyurethane for the finish coat.)

After applying the clear finish, remove the masking tape, including that where the crown molding needs to be glued.

5 Remove the masking tape as shown in the photo *below left*. If a gummy residue remains, clean with a cloth dampened with lacquer thinner.

6 Using masking tape, mask off the face frame stiles and prime the carcase sides. Then, prime the back (E) and crown molding (BB, CC). (We used Krylon Sandable Primer, #1315 All-Purpose Primer White.) Sand lightly with 320-grit sandpaper adhered to a sanding block after the primer has dried. Then, paint the primed areas (we used Rust-Oleum American Accents Heritage Satin Finish Teal 7929). Let the paint dry. If necessary, sand with 600-grit wet/dry sandpaper, and add a second coat. Then, remove the masking tape.

7 Glue, spline, and clamp the back rail (F) to the back (E). Screw the back assembly in place.

8 Glue and clamp the crown molding in place. Glue the knobs into the doors. Install the glass panels in the doors and fasten the stops in place. Mount the hinges on the doors and attach the doors to the carcase. Attach the catches.

9 Remove the top from the buffet, and carefully lay out the position of the bottom ends of the sides (A) on the buffet top. To do this, use the same hole locations shown on the bracket shelf (LL).

10 Working from the bottom side of the buffet top, drill countersunk holes and form the slots. Screw the cupboard to the buffet top. With the aid of a helper, set the cupboard/buffet top onto the buffet and secure with screws.

Written by Marlen Kemmet Project Design: Jan Hale Svec Illustrations: Kim Downing; Lorna Johnson Photographs: Bill Hopkins

Lowering the Boom on Dust

Our tests of 25 dust collectors reveal which one of these dust-bustin' dynamos belongs in your shop.

If you do any amount of woodworking, you know how fast wood chips, shavings, and sawdust pile up. The big chips create a nuisance underfoot, but the fine dust that sifts into every nook and cranny becomes downright devilish. It can spoil a finish, cause wear and tear on motors, and create a health hazard.

To keep this worrisome dust in check, you need to collect it at the source—your woodworking tools—and contain it. Dust collectors solve both problems, and we tested 25 models to help you choose one to settle the dust in your shop.

Print this article

High-volume air flow – the key to dust collection

Most woodworkers own a shop vacuum, so why spend $175 to $700 for a dust collector when you could use that money to buy a "real" tool? While a shop vacuum plays an important cleanup role, it simply can't handle the dust and chips generated by most power tools.

A typical shop vacuum operates with high suction, or static pressure, but moves only a small amount of air—80 to 120 cubic feet per minute (cfm). That's why vacuums come equipped with 1¼"- to 2½"-diameter hoses—to concentrate the air flow. Unfortunately, these hoses plug quickly when trying to handle the volume of chips generated by tools such as planers.

Dust collectors contain centrifugal impellers, turbinelike fans that move much larger volumes of air—300 to 1,900 cfm. Sustaining such air flows requires 4-6" hoses or ductwork, which also can move large volumes of debris without clogging.

Shop vacuums, with their high-speed, noisy universal motors, are intended for short-term, intermittent use. The slower, quieter induction motors in most dust collectors allow for long-term, continuous duty.

Dust collectors also differ from air cleaners, in which a furnace-type blower pulls dusty shop air through a series of filters and recirculates it. Air cleaners trap dust only after it has become airborne, making them a good secondary line of defense—along with a good dust mask—in the battle against dust.

To win the dust control war, you must collect dust at the source before it has a chance to get airborne. And that's precisely what a dust collector does.

Fast Facts

- While many of the collectors we tested are built virtually the same, the performance varied greatly based on the filtration capabilities of the collection bags.
- When it comes to filtering out dust, polyester/felt bags do an excellent job without restricting air flow. We'll tell you which machines offer these as standard equipment or options.
- Cyclone collectors lead the pack in removing even fine dust (15 microns) before the air reaches a filter.

Chalk dust test shows filter bag efficiency

After assembling the collectors—a chore in itself—we sucked up and emptied several loads of chips and dust to build up a dust cake inside the bags. Then we drew air loaded with fine red chalk dust through each of the filter bags backed up with a heavyweight paper towel, as shown *below*, to determine if any of the dust had passed through. If red dust appeared on the paper towel, as it does on the one at *right*, it indicated that the bag wasn't filtering dust sufficiently to avoid causing health risks.

How much capacity do you need, anyway?

Dust collector air-flow ratings vary greatly, depending on a number of factors, such as the size and number of intakes, and how much dust is built up on the filter material. Small portable collectors rated between 300 and 450 cfm will handle one tool at a time, except high-volume dust and chip producers such as planers, shapers, and large stationary sanders. With bags deflated, you can store these small units under a workbench.

Collectors in the 500-750 cfm range can take on nearly any home shop machine singly and will also work with central dust collection systems in small shop settings. Most of the 1-hp collectors we tested fall into this range, and all will operate on 110 volts. Just remember to keep yours on a separate circuit from your power tools to avoid an overload.

To handle two or more tools simultaneously, you'll need a collector in the 900-1,300 cfm range. The 1.5- to 2.5-hp machines we tested fell into this range, making them suitable for most central collection systems. While a few will run on 110 volts, their high amperage requirements invite circuit overloads, so consider using 220-volt service.

We tested four machines rated above a whopping 1,800 cfm and these definitely belong in large shop situations where several tools are running simultaneously. All feature 3-hp, 220-volt motors, and take up considerable floor space. Inflated, they reach near ceiling height.

Continued

Dust Collectors

Three different spins on capturing dust

Three types of collectors currently on the market, shown *below* in cutaway drawings, all use impellers. The main difference: They separate the debris at different stages.

The majority of the machines we tested fall into the single-stage category. Typically, these machines have twin bags. After passing through the impeller, heavy debris drops into the bottom bag while the top bag filters the air. On the small portables, one bag both collects the debris and filters the air.

In a two-stage collector the intake air flows into a collection drum first so that the large, heavy particles drop out before reaching the impeller. Only fine dust passes through the impeller and into the filter bag.

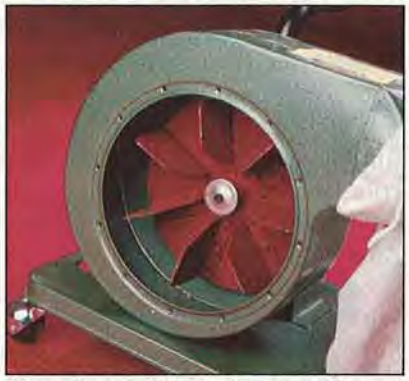
Cyclone collectors capitalize on their funnel shape to push both large particles and fine dust into a collection drum.

Impellers: consider noise and fire hazards

Because single-stage collectors pull everything—chips, wood chunks, stray fasteners—through the impeller, they can generate lots of noise. And metal striking a steel impeller can cause a spark, which could ignite highly flammable wood dust.

Nearly all the machines we tested use steel impellers. A few came equipped with plastic impellers. Somewhat quieter, but less durable than steel, the plastic models don't produce sparks.

The cast-aluminum impeller on the Oneida Systems cyclone, at lower *left*, also doesn't produce sparks. If your projects include metalworking, you can avoid sparking problems with a two-stage or cyclone collector. Since the heavy debris, including fasteners or metal fragments, drops out before passing through the impeller, the chance of creating sparks is virtually eliminated.

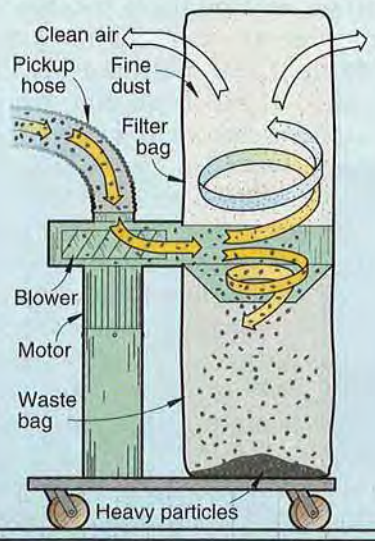


Most dust collectors in our test come equipped with steel plate impellers, as shown above.

SECO's manufacturer installs plastic impellers (above) in all models except the UFO102B.

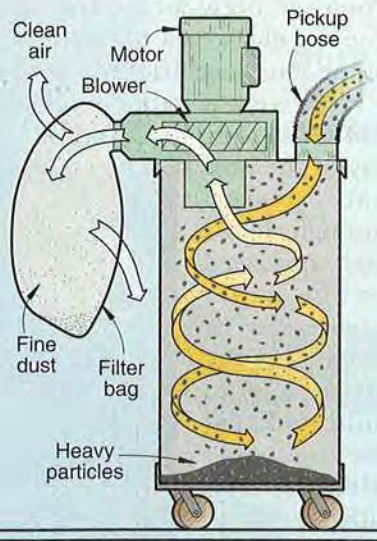
AN INSIDE LOOK AT THREE TYPES OF DUST COLLECTORS

SINGLE-STAGE COLLECTOR



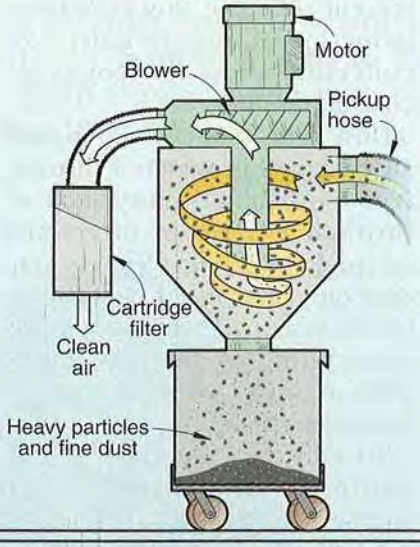
Everything sucked in passes through the impeller. Heavier chips drop into the bottom bag, while the top one traps the dust.

TWO-STAGE COLLECTOR



Heavy chips drop out first, so that only fine dust passes through the impeller. The filter bag then captures the fine particles.

CYCLONE COLLECTOR



Centrifugal force spins even fine dust out against the sides of the cyclone chamber. The funnel then directs it into the waste can.

Containing dust: the mark of a good filter

A dust collector's effectiveness depends on its filter material. If dust passes through the filter, there's little point in collecting it.

Several years ago, manufacturers equipped dust collectors with 50-micron bags. (A micron is a unit of length equal to .001 millimeter—a human hair is about 60 microns in diameter.) Today, most provide 30-micron or finer bags as standard equipment, and many offer 5-micron, polyester/felt bags as a higher-priced option. The inside surface of these bags is singed to prevent dust penetration and clogging.

In our tests, the 50-micron nylon filter bags on the Tradesman 9992 and Central Machinery TI686 (distributed by Harbor Freight) leaked clouds of dust. The makers of Grizzly, and more recently JET, made 30-micron nylon filter bags standard, and we found they performed well once a slight dust cake formed inside the bag. The nylon bags on the SECO machines were excellent at stopping dust, as were the canvas bags on the two Powermatic collectors, and the cloth bag on the Makita 410.

Penn State's three smaller collectors came equipped with polyester/felt bags—and we found them well worth the $20-$30 extra cost over the standard bags. The 5-micron bags come standard on Penn State's DC250.

Star Tools' optional polyester/felt top bag stopped all visible dust, as did similar optional bags from Grizzly and JET. These cost from $30-$50 for a 14"-diameter bag and $40-$70 for a 20"-diameter bag to fit most of the 2-hp and larger machines. Grizzly also sells 14" ($49.95) and 20" ($69.95) Gore™ CleanStream bags that filter particles down to .3 micron—virtually every speck.

More points to consider

- **Clamping systems.** As filter and collection bags fill up with chips and dust, they let less air pass through. The resulting increase in pressure can literally blow the bags off—an experience to be avoided at all costs. Therefore, the clamping system should hold the bags on tightly, yet allow for quick and easy emptying.

  Most of the machines we tested feature quick-release metal band clamps to hold the bags in place. A few came with hose-clamp bands which worked fine, but required more time and a screwdriver to tighten.

  The Sears 29978N had the slickest waste bag clamp system. A tension hoop sewn into the mouth of the bottom bag simply flexes and snaps into place as you insert it inside a rim on the housing.
- **Motors.** The Powermatic and Delta machines had the smoothest starting, quietest running motors. As mentioned earlier, many of the machines are dual voltage. Check the amperage in the chart, on *page 63*, and consider switching to 220-volt power for collectors which draw 20 amps or more at 110 volts.
- **Safety.** A spinning impeller will inflict serious injury to hands or fingers placed into the impeller housing intake. Makita provides the most effective safety system on its 410—a switch prevents it from operating when the pickup hose is disconnected. The Penn State DC5 has a removable grate over the intake, but it plugs easily when sucking up chips. The best safety precaution is to permanently clamp a hose or pipe to the intake. Should the intake or impeller get clogged, unplug the machine, then use a stick to clear away the debris.
- **Mobility.** The small portables are easy to move and compact when not in use, but the inflated bags take up significant room. The easy-rolling 1-hp units take up the least amount of floor space when in use. While equipped with casters, the 2-hp models don't maneuver easily. Their weight and size make the 3-hp giants simply too large to move around on a regular basis.

The makers of JET sew elastic into the mouth of its bags to help hold the bags in place while you flip the band clamp shut.

Hose-type band clamps supplement the cinch straps, as shown, on the two larger Grizzly machines. Used alone, the cinch straps can work loose, allowing the bags to blow off.

Continued

Dust Collectors

If we were in the market ...

In the small portable class, we named the Makita 410 as the top performer, despite its noisy universal motor. The Penn State DC3—with its combination of power, high-filtration bag, and two-year warranty—ranks as both a top tool and top value. Grizzly's G1163 offers good performance for a rock-bottom price.

For the same reasons mentioned about its smaller counterpart, the Penn State DC1-B gets the nod as our top pick among the 1-hp collectors. The SECO UFO90 and JET DC650 offer good value for the money. The Sears 29978N also represents value based on the easy bag changing and nationwide parts and service support.

Among the 1.5- to 2.5-hp units, we had a tougher time picking a winner—most of the machines are built identically. We found the smooth, quiet Powermatic 073 to be the best-built machine. Penn State's combination of 5-micron standard bags and 2.5-hp motor make the DC250 a top tool at a great price. The Grizzly G1029 provides good value, even when you spend the extra $50 for the polyester/felt filter bags.

The Powermatic 075 finished first among the four-bag behemoths, with the Grizzly G1030 chosen as a top value. If you're installing a centralized system, strongly consider the powerful, efficient Oneida Air Systems cyclone. The waste drum empties easily and the filter cartridge needs only occasional attention. Oneida sells the same unit without the blower ($395) to retrofit an existing dust collector. The Blue Tornado also can add cyclone efficiency to your existing collector system.

Written by Kerry Gibson
Technical consultant: Bob McFarlin
Photographs: Bill Hopkins Jr.; John Hetherington
Illustrations: Lorna Johnson

SMALL PORTABLES

1-HP COLLECTORS

1.5- to 2.5-HP COLLECTORS

3-HP COLLECTORS AND CYCLONES

THE LOWDOWN ON DUST COLLECTOR FEATURES

MANUFACTURER/ IMPORTER	MODEL	TYPE	IMPELLER (1)			FILTER BAG			MOTOR				SIZE (INCHES) (WxLxH)	NOISE (DECIBELS)	AIR FLOW (CFM)	PERFORMANCE (5)								WARRANTY (YEARS)	COUNTRY OF ASSEMBLY (6)	WEIGHT (POUNDS)	SELLING PRICE (7)
			IMPELLER MATERIAL	HOUSING MATERIAL	INTAKES (NUMBER/DIAMETER)	NUMBER	MATERIAL (2)	CLAMPS (3)	TYPE (4)	HORSEPOWER	AMPS	VOLTAGE				BAG FILTRATION	BAG CLEANING	BAG CHANGING	BAG CLAMPING SYSTEM	FIT AND FINISH	HOSE QUALITY	MOBILITY	ASSEMBLY				
SMALL PORTABLES																											
GRIZZLY	G1163	Single	SP	SS	1 @ 4"	1	NM	HC	TEFC	1	14/7	110/220	15x53x17	77	450	G	G	E	G	G	G	E	E	1	T	58	$149.93*
MAKITA	410	Single	SP	SS	1 @ 4"	1	FC	SL	U	N/A	9	110	24x48x24	94	307	E	E	E	E	E	E	E	E	1	J	20	379.00*
PENN STATE	DC5	Single	SP	SS	1 @ 4"	1	PF	HC	U	N/A	5	120	13x14x23	90	914	E	G	E	G	E	E	E	E	2	T	18	189.00*
	DC3	Single	SP	SS	1 @ 4"	1	PF	HC	TEFC	1.5	12/6	110/220	15x54x17	76	760	E	G	E	G	E	E	E	E	2	T	46	214.95*
1-HP COLLECTORS																											
DELTA	50-180	Two	AL	SS	1 @ 5"	1	FC	HC	TEFC	1	13.6/6.7	115/200	30x56xVar	83	700	E	G	E	G	G	E	P	G	2	U	72	519.95*
HARBOR FREIGHT	TI686	Single	SP	SS	1 @ 6", 2 @ 4"	2	NM	QR	TEFC	1	14/7	110/220	26x38x77	87	750	P	G	F	G	E	--	G	E	90 days	T	143	359.99
JET	DC650	Single	PL	SS	1 @ 4"	2	NM	QR	TEFC	1	16/8	110/220	14x28x57	84	650	F	G	F	G	E	--	E	E	2	T	84	229.95*
PENN STATE	DC1-B	Single	SP	SS	1 @ 5", 2 @ 4"	2	PF	QR	TEFC	1	16/8	110/220	24x28x58	84	700	E	G	E	G	G	E	E	E	2	T	66	239.95*
SEARS	29978N	Single	SP	SS	1 @ 4"	2	NM	QR, TB	TEFC	1	7	120	15x27x60	87	408	G	G	E	E	G	G	E	G	1	T	72	299.99*
SECO	UFO90	Single	PL	SS	1 @ 4"	2	NM	NS	TEFC	1	7	110	14x28x57	77	610	E	G	F	G	G	--	E	E	1	T	75	167.00*
	UFO80	Single	PL	SS	1 @ 4"	2	NM	NS	TEFC	1	12/6	110/220	14x32x66	81	655	E	G	G	G	G	--	E	G	1	T	95	210.00*
TRADESMAN	9992	Single	SP	SS	1 @ 4"	2	NM	QR	TEFC	1	7	110	13x27x64	87	453	P	G	P	P	G	--	G	F	5/1	T	72	249.95*
1.5- TO 2.5-HP COLLECTORS																											
DELTA	50-181	Two	AL	SS	1 @ 6"	1	FC	HC	TEFC	2	10	230	30x56xVar	84	1100	E	G	E	G	G	E	P	G	2	U	97	699.95
GRIZZLY	G1029	Single	SP	SS	1 @ 5", 2 @ 4"	2	NM	NS, SC	TEFC	2	12	220	31x38x77	85	1182	G	G	G	G	G	G	G	E	1	T	140	275.00*
JET	DC1200	Single	SP	SS	2 @ 4"	2	NM	QR	TEFC	2	30/15	110/220	31x38x77	87	1200	F	G	G	G	E	--	G	E	2	T	143	449.95
PENN STATE	DC250	Single	SP	SS	1 @ 6", 2 @ 4"	2	PF	QR	TEFC	2.5	13	220	34x38x77	94	1350	E	G	G	G	G	--	F	G	2	T	145	354.95
POWERMATIC	073	Single	SP	SS	2 @ 4"	2	FC, PB	QR	TEFC	1.5	25/15	110/220	17x36x73	84	900	E	E	F	G	E	--	E	G	1	T	125	399.95
SECO	UFO101	Single	SP	SS	1 @ 6", 2 @ 4"	2	NM	NS, QR	TEFC	2	24/12	110/220	25x38x77	86	1182	E	G	F	G	G	--	G	E	1	T	140	255.00*
STAR TOOLS	S3820	Single	SP	SS	1 @ 5", 2 @ 4"	2	NM	NS	TEFC	2	12	220	31x38x77	86	1182	G	G	G	F	F	G	G	E	1	T	140	255.00*
3-HP COLLECTORS																											
GRIZZLY	G1030	Single	SP	SS	1 @ 6", 3 @ 4"	4	NM	NS, SC	TEFC	3	18	220	33x57x77	92	1883	G	G	F	G	F	G	F	F	1	T	165	445.00*
JET	DC1900	Single	SP	SS	1 @ 6", 3 @ 4"	4	NM	QR	TEFC	3	18	220	23x53x93	93	1900	F	G	G	G	E	--	F	G	2	T	198	619.95
POWERMATIC	075	Single	SP	SS	1 @ 6", 2 @ 4"	4	FC, PB	QR	TEFC	3	16	220	27x61x97	93	1900	G	G	F	G	E	--	G	F	1	T	155	679.95
SECO	UFO102B	Single	SP	SS	1 @ 6", 3 @ 4"	4	NM	NS, QR	TEFC	3	34/17	110/220	37x53x77	93	1883	E	G	G	G	G	--	F	G	1	T	180	499.95*
CYCLONES																											
BLUE TORNADO	102	Cyc	N/A	N/A	1 @ 6"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36x36x80	N/A	N/A	E	--	E	E	F	--	--	G	3	U	70	325.00*
ONEIDA	1.5 HP	Cyc	AL	SS	1 @ 6"	1	PP	N/A	DP	1.5	13.4/6.7	110/220	22x22x78	94	750	E	F	E	E	G	--	--	G	1	U	92	694.00*

NOTES:

1. (AL) Aluminum
   (SP) Steel plate
   (PL) Plastic
   (SS) Stamped steel
2. (FC) Fabric cloth
   (NM) Nylon mesh
   (PB) Plastic bag
   (PF) Polyester/felt
   (PP) Pleated paper
3. (HC) Hose clamp
   (NS) Nylon strap
   (SC) Steel clamp
   (QR) Quick release
   (SL) Slide lock
   (TB) Tension band
4. (TEFC) Totally enclosed, fan cooled
   (DP) Drip proof (U) Universal
5. E Excellent F Fair
   G Good P Poor
6. (J) Japan
   (T) Taiwan
   (U) United States
7. Selling prices based on catalogs.
   (*) Shipping extra

MANUFACTURERS:

Blue Tornado
800/292-0157

Delta International Machinery Corp.
800/438-2486

Grizzly Imports Inc.
800/541-5537 or
800/523-4777

Harbor Freight (Central Machinery)
800/423-2567

JET Equipment and Tools
800/274-6842

Makita
800/462-5482

Oneida Air Systems
315/476-5151

Penn State Industries
800/377-7297

Powermatic
800/248-0144

Sears Craftsman
Call or visit your local Sears store

SECO Investments Co.
800/225-7326

Star Tools
888/678-8777

A BRIGHT IDEA

You'll love this lamp with a built-in bonus—four handy drawers. Set the country-style beauty on a table beside your favorite chair, where you'll enjoy the extra light to see by—and the drawers to stash away stuff you'd rather not see.

Start with the lamp body

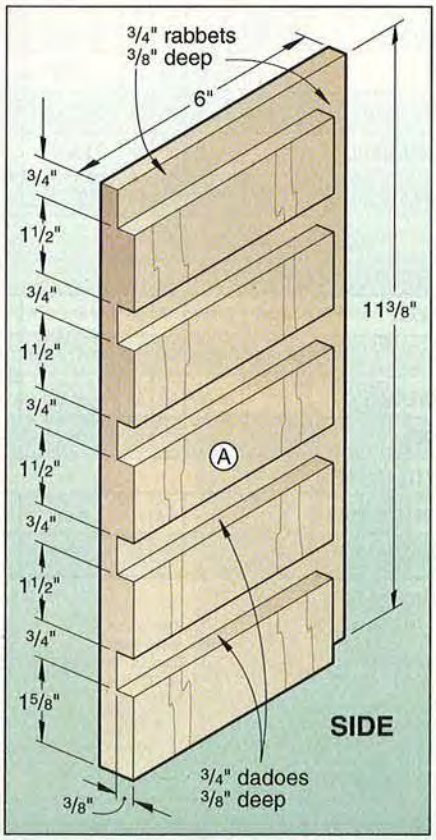
1 Cut the sides (A), drawer supports (B), and back (C) to the dimensions shown in the Bill of Materials, *opposite page*.

2 Referring to the Side drawing, lay out four ¾" dadoes on each side (A) where shown. Mark the top and right edge of one part and the top and left edge of the other for the ¾" rabbets.

3 Install a ¾" dado blade on your tablesaw, and set the cutting depth to ⅜". Equip your miter gauge with a scrapwood auxiliary fence that extends past the dado blade to minimize splintering of the workpiece as the blade exits each cut. Now, saw the dadoes and the top rabbet on each side.

4 Position your rip fence 5¼" from the dado blade. Saw the rabbet for the back on each side.

5 Chuck a ¼" bit in your drill press. On two parts B, drill a hole



Print this article

This country-style lamp includes handy drawers

5/16" from the back edge, centered from side to side. Change to a 25/64" bit, and drill a hole in the same location through each of the remaining three parts B. On one of them, counterbore the 25/64" hole with a 1/2" hole 1/4" deep.

6 Dry assemble parts A, B, and C, referring to the Exploded View and Side View Section drawings. Note that the three drawer supports (B) with 25/64" holes go in the top rabbet and the two dadoes right below it. The counterbored drawer support goes in the second dado below the top, with the counterbore facing up.

7 Glue and clamp the sides, drawer supports, and back together. After the glue dries, unclamp the body assembly and finish-sand it, using progressively finer sandpaper from 100- to 220-grit.

Add the top and trim

1 Cut the top (D) to the size shown in the Bill of Materials.

Continued

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A side	3/4"	6"	11 3/8"	O	2
B drawer support	3/4"	5 1/4"	5 1/4"	O	5
C back	3/4"	5 1/4"	11 3/8"	O	1
D top	3/4"	7 1/4"	7 1/4"	O	1
E* base trim	5/8"	2"	7 1/4"	O	4
F drawer front	1/2"	1 15/16"	4 15/16"	O	4
G drawer side	1/2"	1 5/16"	5 1/8"	O	8
H drawer back	1/2"	1 5/16"	3 15/16"	O	4
I drawer bottom	1/8"	4 7/16"	4 3/8"	HB	4

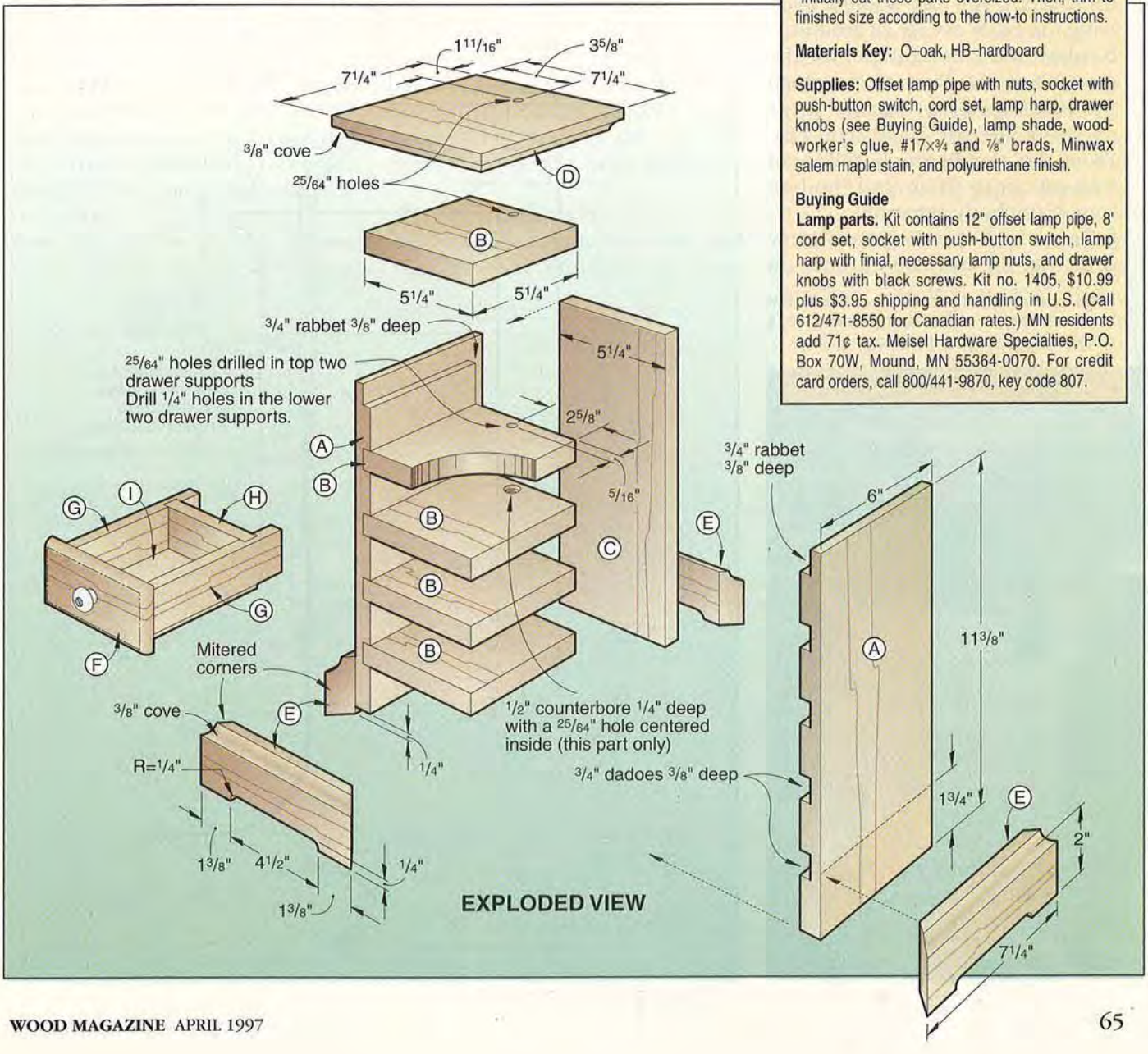
*Initially cut these parts oversized. Then, trim to finished size according to the how-to instructions.

Materials Key: O–oak, HB–hardboard

Supplies: Offset lamp pipe with nuts, socket with push-button switch, cord set, lamp harp, drawer knobs (see Buying Guide), lamp shade, woodworker's glue, #17x3/4 and 7/8" brads, Minwax salem maple stain, and polyurethane finish.

Buying Guide

Lamp parts. Kit contains 12" offset lamp pipe, 8' cord set, socket with push-button switch, lamp harp with finial, necessary lamp nuts, and drawer knobs with black screws. Kit no. 1405, $10.99 plus $3.95 shipping and handling in U.S. (Call 612/471-8550 for Canadian rates.) MN residents add 71¢ tax. Meisel Hardware Specialties, P.O. Box 70W, Mound, MN 55364-0070. For credit card orders, call 800/441-9870, key code 807.



2 Install a 3/8" cove bit in your table-mounted router. Adjust the cutting depth to 3/8". Then, starting across the grain on one end and working around the piece counterclockwise, rout a cove along the bottom edge of the top.

3 Mark a center 1 11/16" from the back edge and centered from side to side. Drill a 25/64" hole at the mark. Finish-sand the top.

4 Glue and clamp the top to the body assembly. Align the hole through the top with the hole through the upper support (B). (Insert a short length of 3/8" dowel rod into the holes to help align the parts.) The top should overhang the body evenly all around.

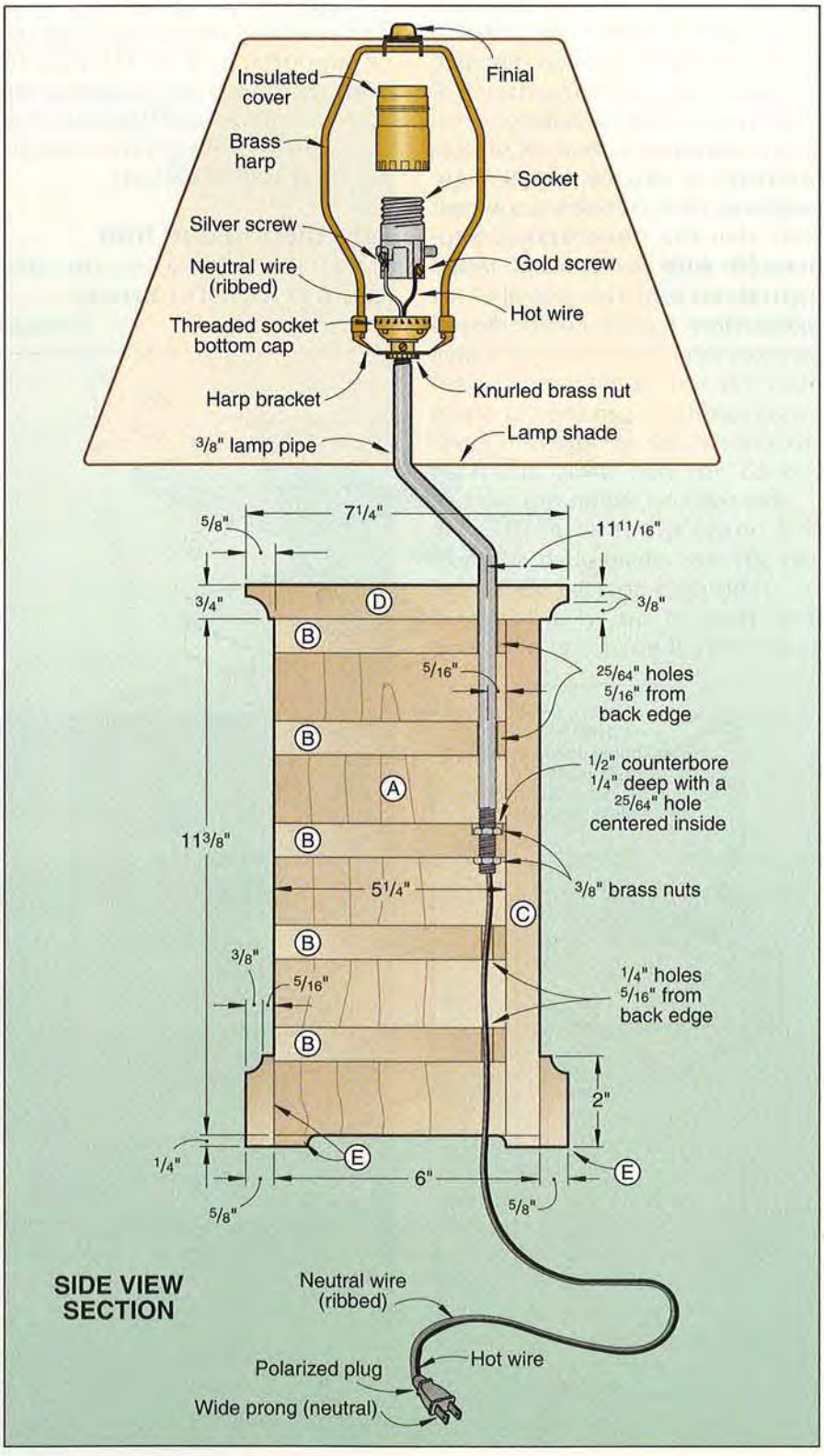
5 Adjust the cutting depth for the cove bit to 5/16". Rout a cove along the top edge of a 3/8×2×36" piece of stock for the base trim (E). From the routed stock, miter-cut four pieces to fit around the bottom of the body assembly.

6 Referring to the Exploded View drawing, lay out the cutouts on the base moldings (E) to form the feet. Scrollsaw or bandsaw them.

7 Glue and clamp the base trim to the body assembly, as shown *below left*. Note that the top of the cutout opening lies flush with the bottom of the body.

8 Allow time for the glue to dry. Then, remove the clamps and sand the base trim.

Glue and clamp the miter-cut base trim to the bottom of the lamp body. The cutouts form feet for the lamp.



Now, for the drawers

1 From ½" stock, cut four drawer fronts (F) to the size shown in the Bill of Materials.

2 Install a ¼" round-over bit in your table-mounted router. Starting with the end grain, rout all around the front edge of each drawer front.

3 Install a ¾" dado blade on your tablesaw, and adjust the cutting depth to ¼". Using the miter gauge for safety and accuracy, saw the ¾" rabbets where shown by the Drawer drawing.

4 Leaving the cutting depth the same, position the saw's rip fence 1 9/16" from the blade. With this setup, cut a ⅜"-wide rabbet along the bottom edge of each drawer front. Move the fence ⅛" farther from the blade, and saw the ¼"-wide top rabbets. Be aware that the stock won't cover the full width of the dado blade in these two cuts.

5 At the center of each drawer front, drill a 1/16" pilot hole ⅜" deep. The screws for the knobs will drive into these holes.

6 Cut the drawer sides (G) and backs (H) to the sizes shown. Saw the four drawer bottoms (I) from ⅛" hardboard.

7 Set up the tablesaw with a ½" dado blade. With the cutting depth set to ¼", saw a dado where shown near the back of each drawer side.

8 Sand all parts. Then, referring to the Drawer illustration, glue and clamp the drawer front, sides, and back (F, G, H). Using a clipped-off brad as a drill bit, drill pilot holes for #17×⅞" brads at the drawer front where shown, and drive in the brads.

9 After the glue dries, remove the clamps. Place the bottom (I) in position on each drawer. Drill pilot holes, then attach the bottoms with #17×¾" brads and glue.

Apply the finish

1 Inspect the body assembly and the drawers. Finish-sand, using progressively finer grits to 320. Clean off all sanding dust.

2 Stain the parts. (We applied Minwax salem maple stain, following the instructions on the product label.)

3 Allow the stain to dry. Apply three coats of semi-gloss or satin clear finish, sanding between coats. (We used Minwax fast drying satin polyurethane.)

Wire the lamp

1 Insert the long part of the lamp pipe through the holes in the top. As you push the threaded end into the second drawer bay from the top, reach in and thread one of the lamp nuts onto it. Run the nut all the way to the top of the threads.

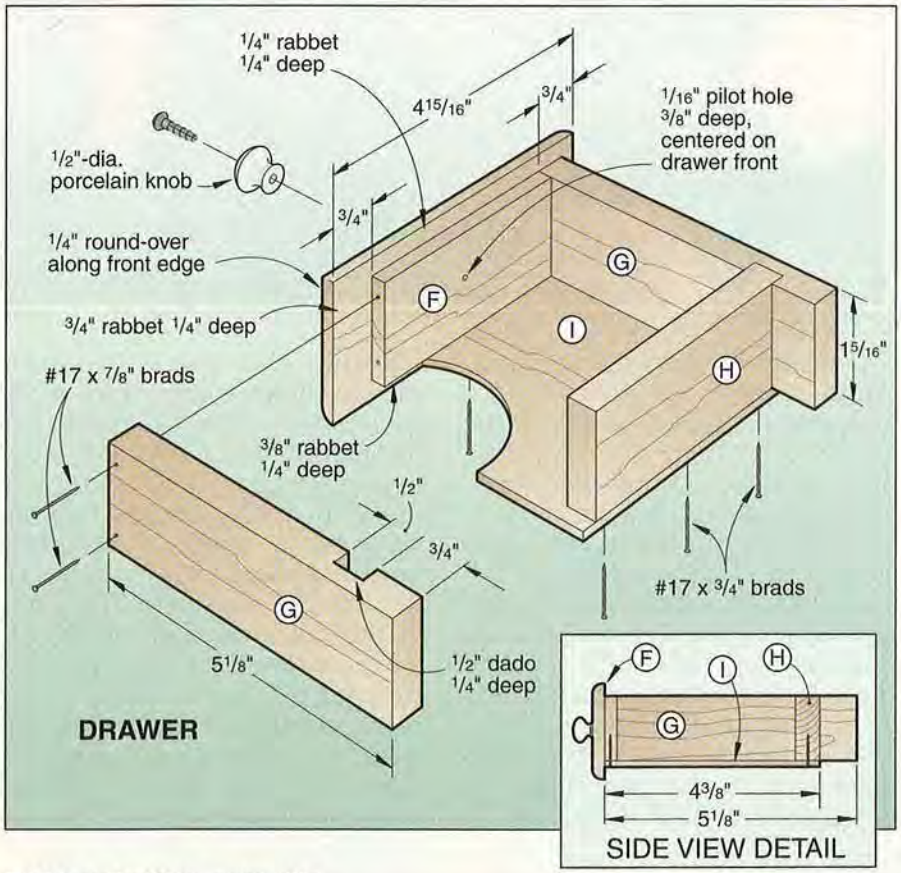
2 Push the pipe on through the hole in the third support (B). Then, reach in through the third drawer bay and thread the second lamp nut onto the pipe, shown in the Side View Section drawing.

3 At the top of the pipe, thread on the knurled brass nut, the harp bracket, and the bottom of the socket. Adjust the pipe to place the socket over the middle of the lamp top (D).

4 Feed the free end of the cord through the holes in the lower supports (B) and push it through the lamp pipe.

5 Separate the wires, and strip the conductor ends. Note that the side of the cord coming out of the wide-pronged side of the plug has narrow ridges molded into it. (You can feel them with a fingernail.) Connect the conductor on this side to the silver screw (neutral terminal) on the lamp socket. The conductor in the plain side (from the plug's narrow prong) goes to the gold screw.

6 Assemble the socket. Install the harp on the bracket. Now, you're ready to screw in a bulb and add a shade to complete the lamp.

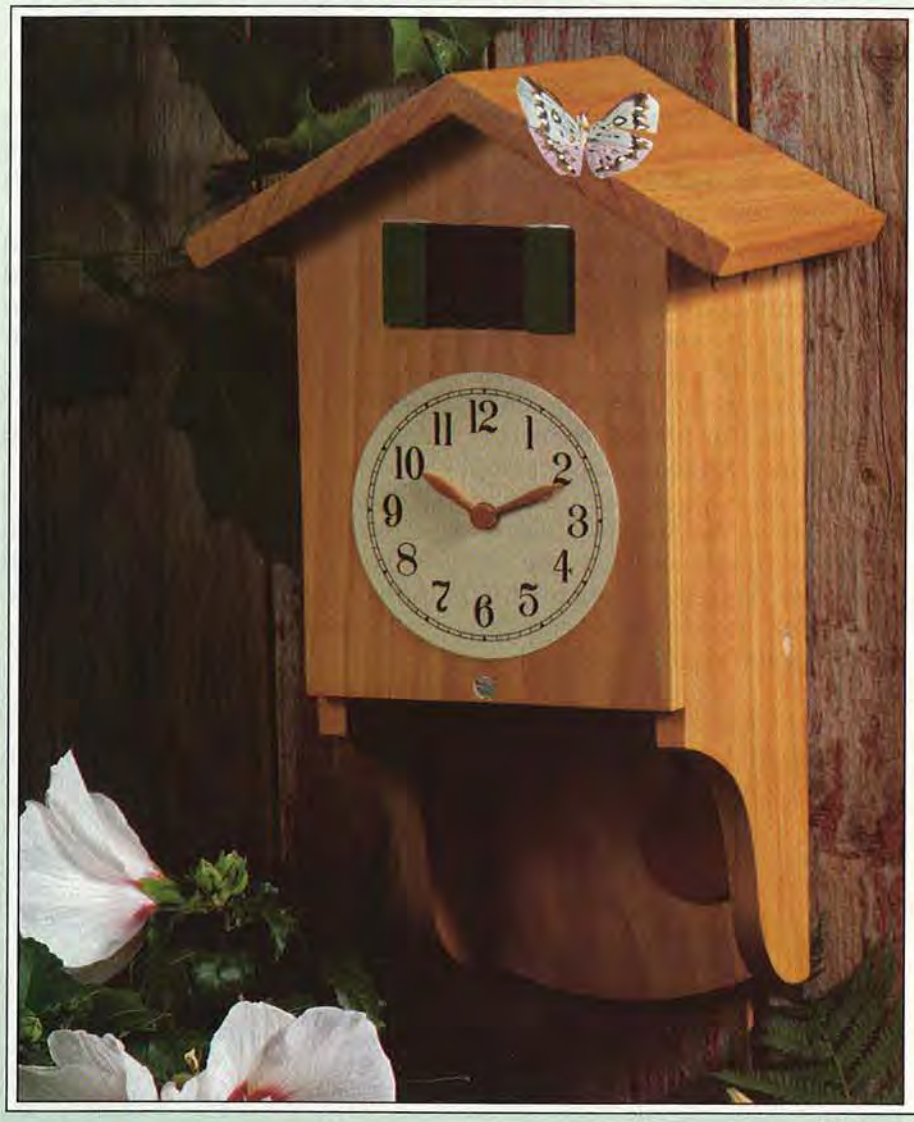


Project design: James R. Downing
Illustrations: Kim Downing; Lorna Johnson
Photographs: King Au; John Hetherington

Birdhouse Gone

A Timeless Project In The Strictest Sense

It might seem a little cuckoo to build a clock that doesn't tell time. It's a smart move in this case, however, for our mock clock is actually a decorative birdhouse that adds nothing but charm to your home or patio.



Cut the parts to the sizes shown in the Bill of Materials. Refer to the Parts View drawing *opposite page*, then saw the peaked gable on the back and front (A, D). For a neat job, lay out the cutting line on the front (D). Stack that part on top of the back (A), with the good side of each facing upward. Fasten them together temporarily with double-faced tape. Make sure the top edges and both side edges are flush, then saw the cutting lines on your tablesaw. Separate the pieces.

Copy the full-sized pattern for the lower portion of the back from the *WOOD PATTERNS*® insert in the middle of the magazine. Affix the pattern to the back (A) with rubber cement or spray adhesive, then bandsaw or scrollsaw the curved bottom.

Copy the pattern for the bottom portion of the side. Stack the two side pieces (B) for cutting, with the good sides out. Adhere the pattern to the top piece, then bandsaw or scrollsaw the profile.

Tilt your tablesaw blade to cut a 30° bevel. Saw a bevel along the top of each side, taking care to cut the low side of the bevel on the outside of each piece. Also bevel each roof piece (C) where shown on the Exploded View drawing. On those, the long side of the bevel goes to the outside.

Next, chuck a ⅜" round-over bit in your table-mounted router. Rout along both sides on the back edge of the bottom (E) to create a rounded edge.

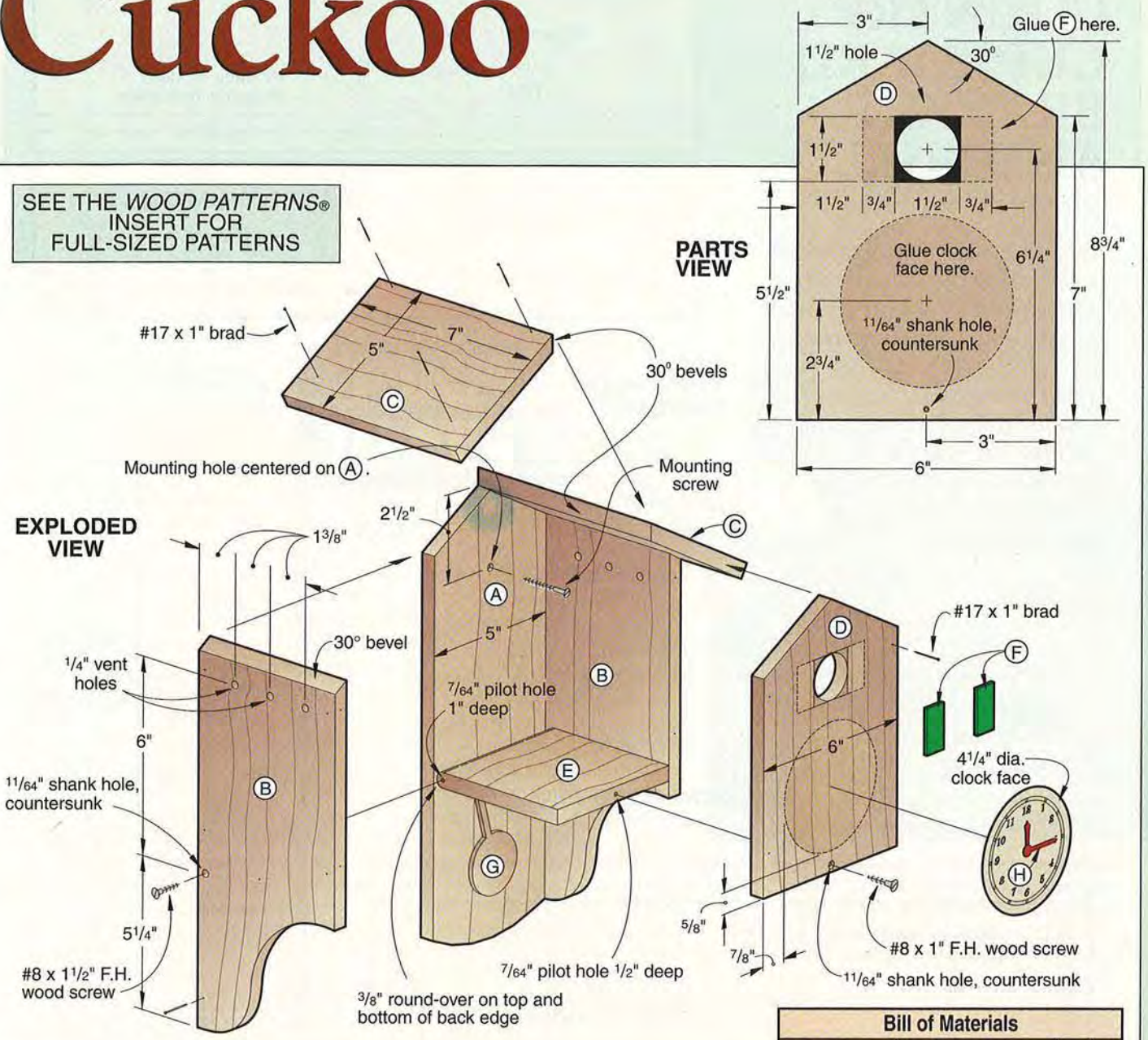
Mark the position for the entry hole on the front. Then, with a drill press and holesaw, bore the entry hole. Drill the mounting hole in the back and the three ventilation holes on each side.

Using #17×1" brads and glue, attach the two sides (B) to the back (A). (If your birdhouse will go outside, use weather-resistant glue such as Titebond II.) The sides fasten onto the edges of the back. Then, nail and glue the front (D) to the sides. The front fits onto the edges of the sides. Set the nails and fill the holes.

Position the bottom (E) inside the assembly where shown. On each side, drill a 7/64" pilot hole through the side (B) into the edge of the bottom. The bottom will pivot on screws in these holes to open for cleaning. Drill a pilot hole centered on the front (D) into the bottom's edge. The screw in this hole will hold the bottom shut. Remove the bottom and drill through the pilot holes in the sides and front with an 11/64" bit. Countersink the holes on the outside. Sand the assembled birdhouse and the bottom.

Cuckoo

SEE THE *WOOD PATTERNS*® INSERT FOR FULL-SIZED PATTERNS



Attach the roof pieces with brads and glue. Set the nails, fill the holes, and sand the roof. Using epoxy adhesive, affix the metal clock face to the front where shown. (See the Buying Guide for the face we used. Or, you could hand-paint a face on the front, if you prefer.)

Trace the patterns for the hands and pendulum onto the ⅛" stock. (We cut the hands, pendulum, and the shutters from tempered hardboard.) Scrollsaw the hands and pendulum. Paint them copper or gold. Paint one face and all edges of each shutter (F) green. Draw a square around the entry hole where shown, then paint black inside it.

Glue the hands, pendulum, and shutters into place. The pendulum should appear to pivot behind the top of the face. Apply two coats of satin polyurethane to the birdhouse and the bottom. Install the bottom, and dab beige paint on the screw heads.

Project Design: © David Ashe, Workshop Blueprint Co.
Photograph: John Hetherington
Illustrations: Kim Downing; Roxanne LeMoine

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
A back	½"	5"	14⅜"	C	1
B side	½"	5½"	12½"	C	2
C roof	½"	5"	7"	C	2
D front	½"	6"	8¾"	C	1
E bottom	½"	4⅞"	5"	C	1
F shutter	⅛"	¾"	1½"	HB	2
G pendulum	⅛"	2¼"	4½"	HB	1
H hands	⅛"	1½"	3"	HB	1

Materials Key: HB–tempered hardboard, C–cedar

Buying Guide

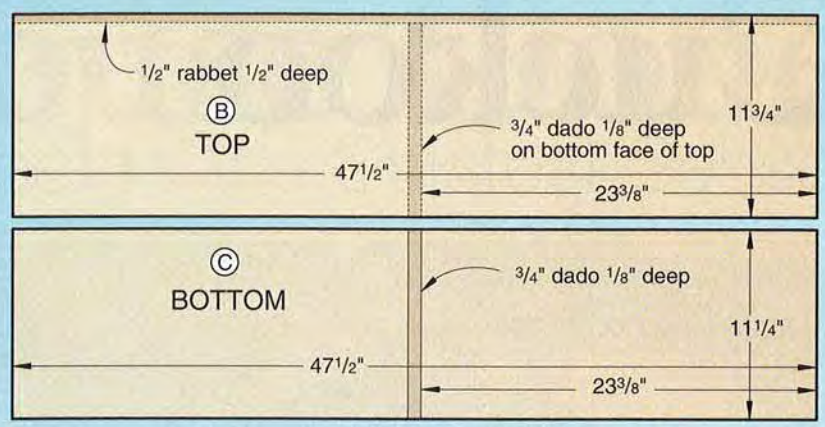
Clock face. Metal clock face with Arabic numerals, 4¼" diameter. Product no. 71236, $4.99 ppd. in U.S. Klockit, P.O. Box 636, Lake Geneva, WI 53147. Or call 800/556-2548 to order.

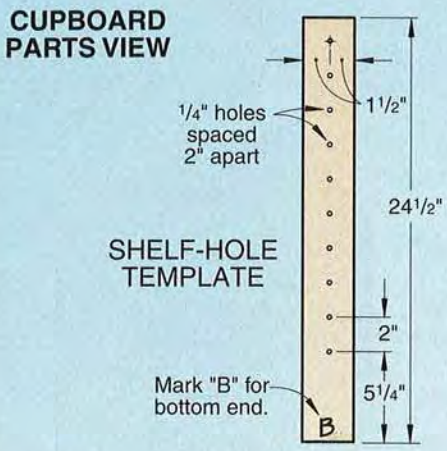
COUNTRY CUPBOARD BRACKET AND SHELF

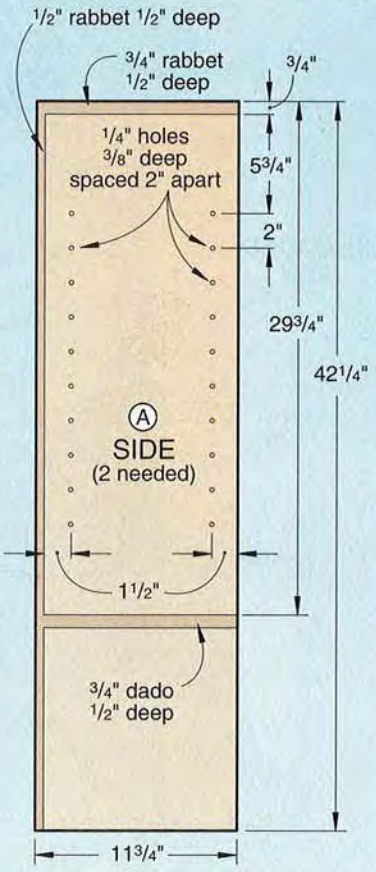
Continued from page 52

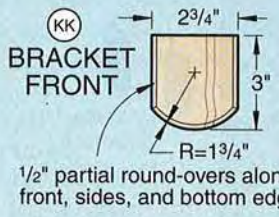
Note: *If you don't have the back issues with the country-style table and buffet shown on page 52, but would like a photocopy, send an 8½×11" self-addressed stamped envelope and $4 per article to* WOOD *Magazine's Country Table and Buffet, 1912 Grand Avenue, Des Moines, IA 50309-3379.*

Continued on page 72

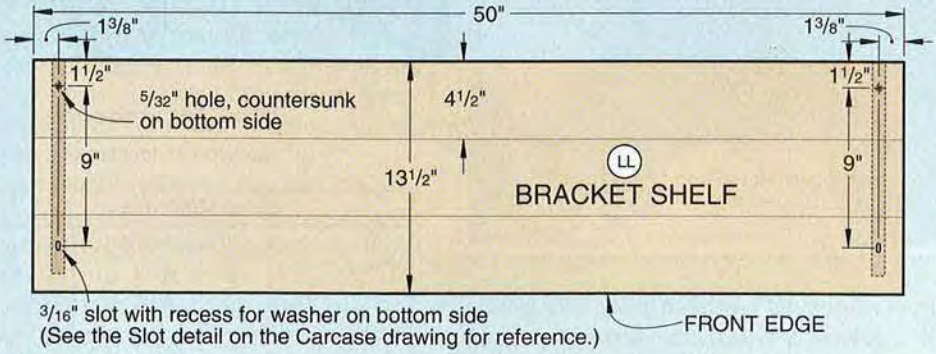


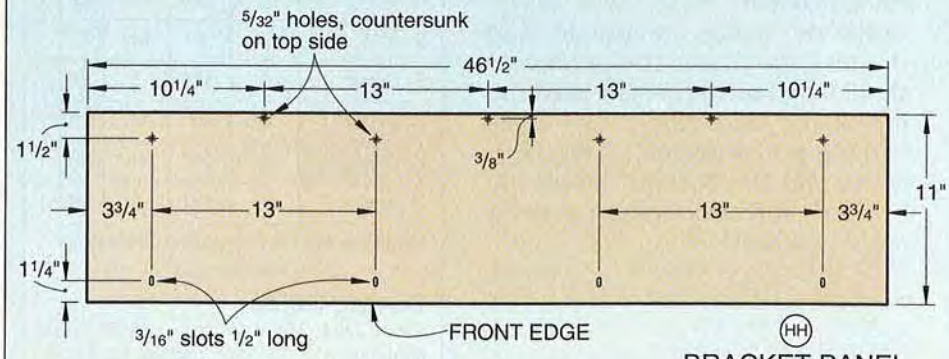


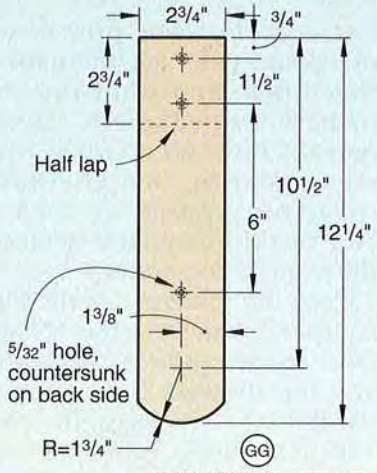




BRACKET PARTS VIEW







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- ❑ Gunsmithing 92432
- ❑ Professional Woodworking 43683
- ❑ Upholstery 81352
- ❑ Vinyl Repair 71285
- ❑ Electrician 95198
- ❑ PC Specialist 38189
- ❑ Computer Programmer 35346
- ❑ Computer Networking 39176

Name _____

Street _____

City _____ State _____ Zip _____

COUNTRY CUPBOARD BRACKET AND SHELF

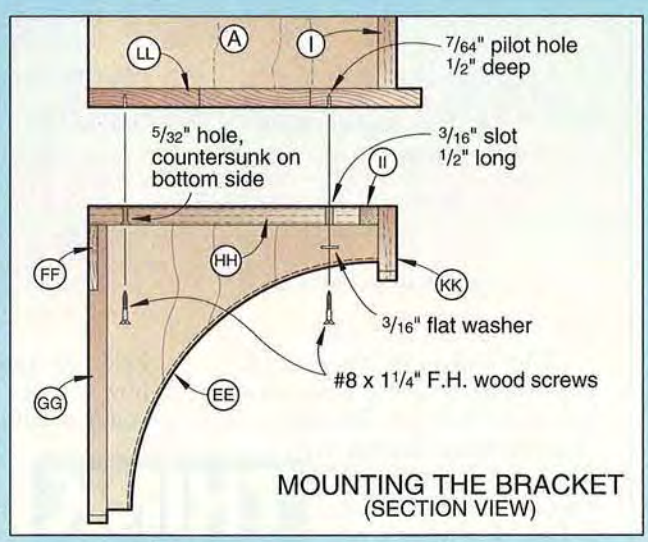
Continued from page 57

Bill of Materials

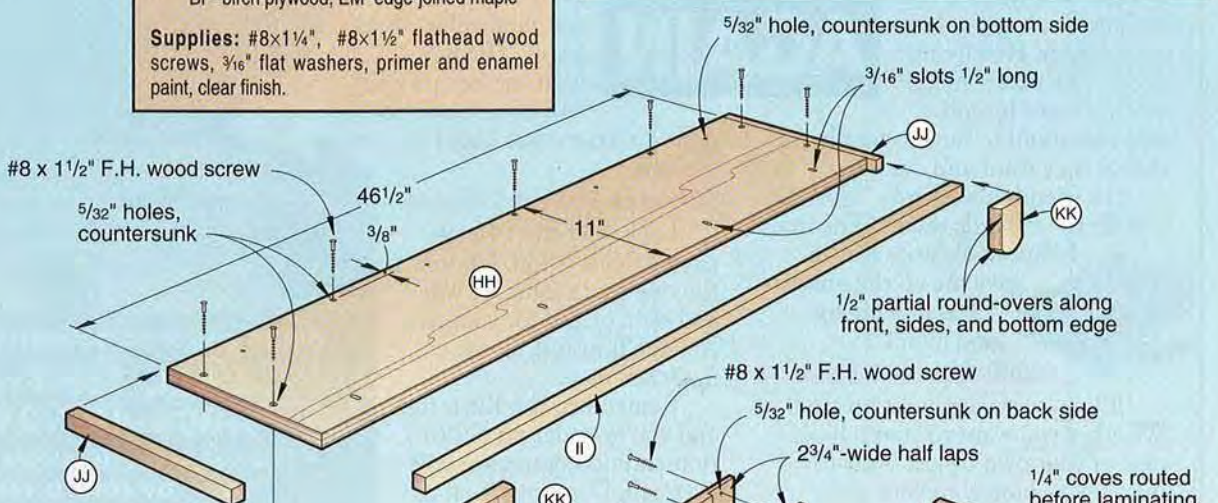
Part	Finished Size T	W	L	Matl.	Qty.
BRACKET & SHELF					
EE brackets	1½"	11"	11½"	LM	2
FF bracket rail	¾"	2¾"	48"	M	1
GG bracket stiles	¾"	2¾"	12¼"	M	2
HH bracket panel	¾"	11"	46½"	BP	1
II panel front band	¾"	¾"	46½"	M	1
JJ panel side band	¾"	¾"	11¾"	M	2
KK bracket front	¾"	2¾"	3"	M	2
LL shelf	¾"	13½"	50"	EM	1

Materials Key: LM–laminated maple, M–maple, BP–birch plywood, EM–edge-joined maple

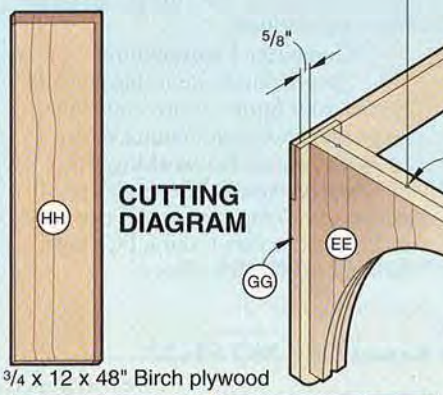
Supplies: #8x1¼", #8x1½" flathead wood screws, 3/16" flat washers, primer and enamel paint, clear finish.



MOUNTING THE BRACKET (SECTION VIEW)



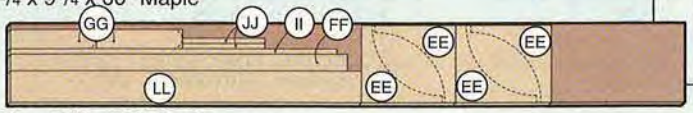
BRACKET ASSEMBLY EXPLODED VIEW



CUTTING DIAGRAM

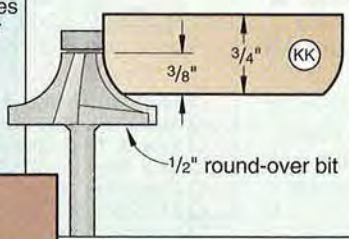
3/4 x 12 x 48" Birch plywood

3/4 x 9 1/4 x 60" Maple

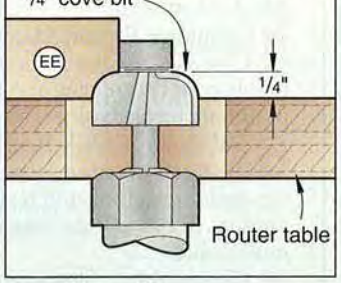


3/4 x 11 1/4 x 96" Maple

PARTIAL ROUND-OVER DETAIL



COVE DETAIL



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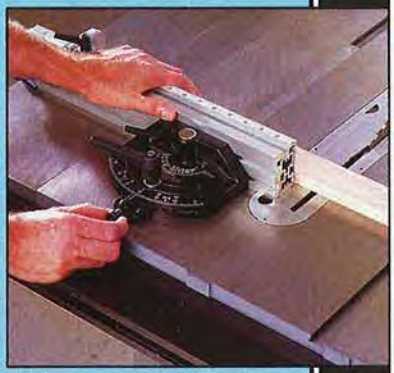

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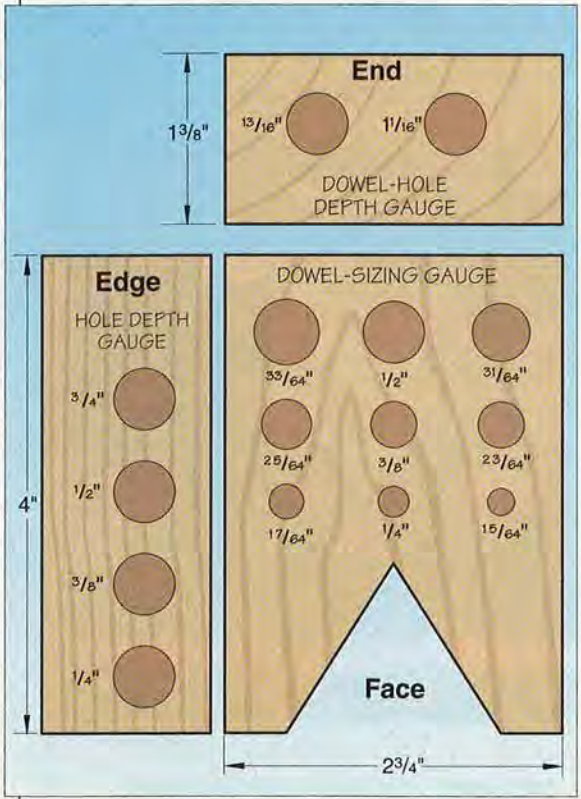
4. At the rear of the block, the ***V-slot*** helps keep your drill bit plumb. Just place the bit on the workpiece, push the slot up to the bit, and tilt the bit until it fits snugly in the corner of the slot.

To build the gauge, use a piece of kiln-dried hardwood. This will help minimize any humidity-related swelling and shrinking of the wood.



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The set covers angles from 0° to 7.5° in .5° increments. Each U-shaped plastic gauge has two angle settings, one along each outside edge, and a flat base that sits squarely on the power tool table.

When I checked each of the clearly marked angles with a precision adjustable drafting triangle, I found every one of the 16 increments to be dead-on. Though designed for setting bevels on scrollsaws, the gauges worked fine on my bandsaw and tablesaw, too.

ACCU-ANGLE makes sense for anyone who frequently cuts small-angle bevels.

—Tested by Dave Henderson

PRODUCT SCORECARD

ACCU-ANGLE gauges

Performance	★ ★ ★ ★ ★
Price	$12.99
Value	★ ★ ★ ★ ★

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Continued on page 78

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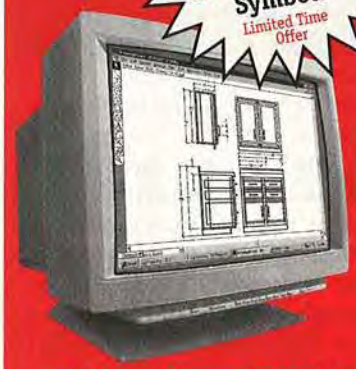

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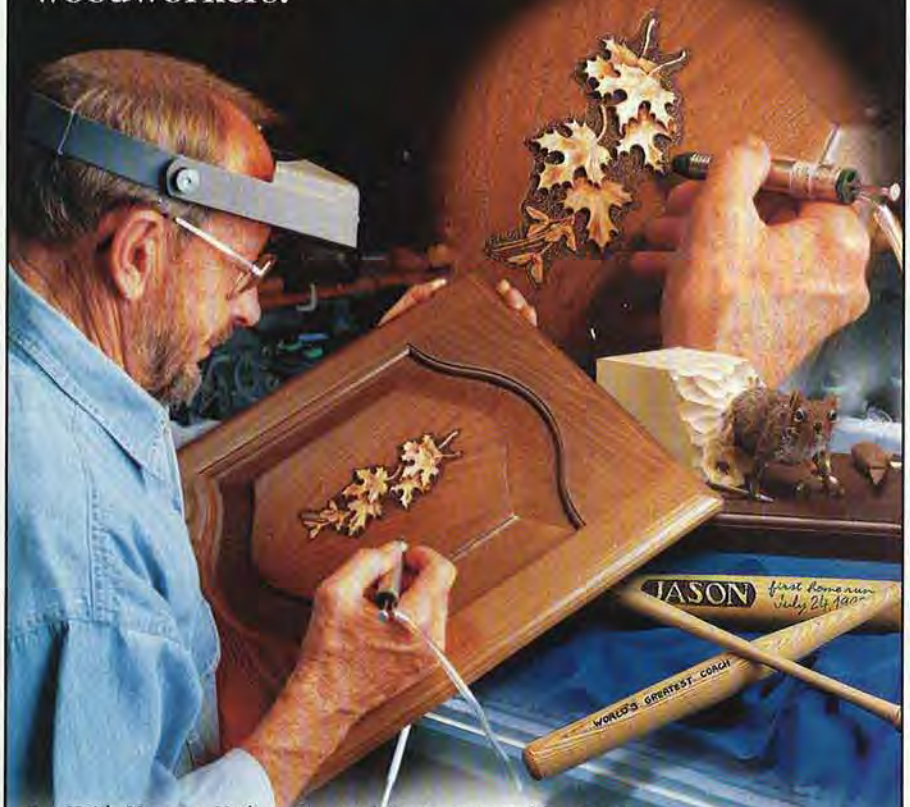

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PRODUCTS THAT PERFORM — SHOP TESTED

Continued from page 76

Low-cost bits work well

I've used several brands of bits over the years, and it seems like they're either too expensive or hardly worth bringing home. But after I tried these new brad-point and Forstner bits from Wolfcraft, I found a happy medium between the extremes.

Both Chinese-made products come with a titanium nitride coating that the manufacturer claims extends bit life up to six times over that of non-coated bits. I can't vouch for that, but I do know that the Forstner bits bored holes that were within .003–.004" of the size stated on the package. Furthermore, the walls of the holes were smooth and the bottoms appeared flat. The Forstner set contains ½", ⅝", ¾" and 1" bits.

When I put the brad-point bits to the test, they did a decent job of drilling holes, but I did detect some wobbling which I traced to the brad-points being ground slightly off-center. However, tests on two additional sets revealed no discernible wobbling. The 7-piece set includes bits from ⅛" to ½" in 1/16" increments.

—Tested by Dave Henderson

PRODUCT SCORECARD

Titanium nitride coated Forstner and brad-point drill bit sets

Performance	★ ★ ★ ☆ ☆
Price	$29.99 and $22.99
Value	★ ★ ★ ★ ☆

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Continued on page 86

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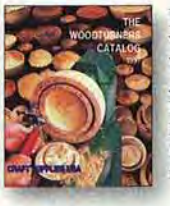

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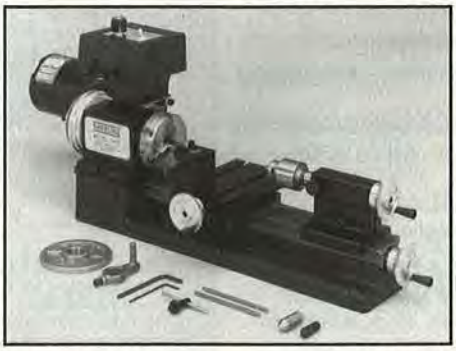

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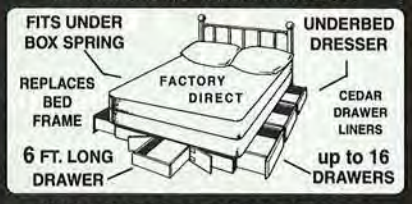

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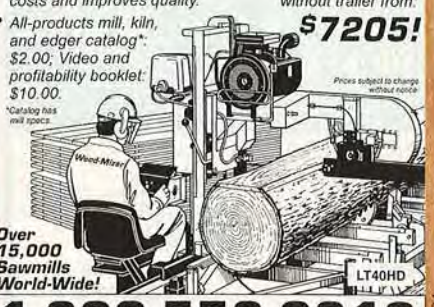

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PRODUCTS THAT PERFORM — SHOP TESTED

Continued from page 78

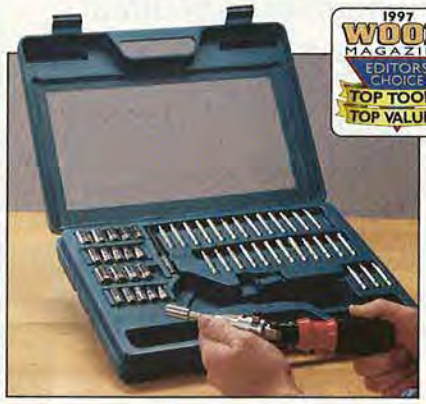
A ratchet driver set with a high-quality difference

Ratchet driver sets, many of them imported, have been on the market for quite some time. But this one from Hafele distinguishes itself from the rest because of the high quality of its Super Torque ratcheting driver handle, and its reasonable price.

It has several things going for it. First, I found it extremely comfortable to use, thanks mainly to its ridged rubber grip. Second, the ratchet mechanism worked smoothly, and the direction was easy to change. Third, I discovered that the ratchet will swivel up to 90° left or right and lock there to allow you to apply more pressure. And if that weren't enough, you can store frequently used bits below a screw-on cap in the end of the handle.

Having this product in your shop will eliminate the hassle of always looking around for that one socket or bit that you never seem able to find. Hafele also offers a similar set with a straight-handled, non-flexing ratchet for $11.95.

—Tested by Dave Henderson



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Hafele America, 3901 Cheyenne Dr., P.O. Box 4000, Archdale, NC 27263. Call 910/889-2322.

Continued on page 88

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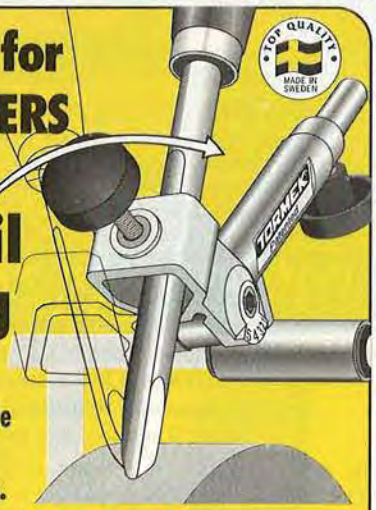

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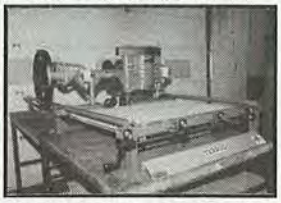

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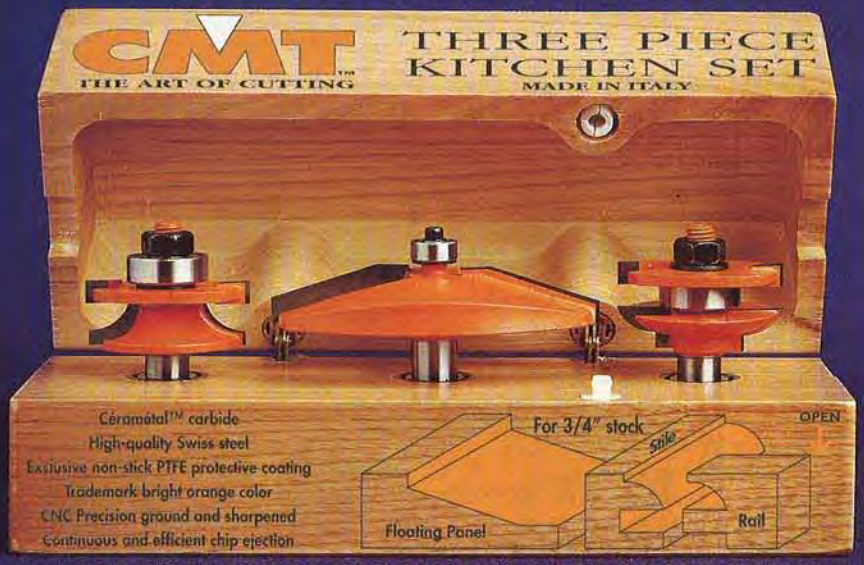

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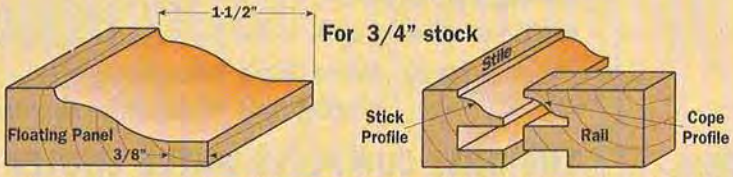

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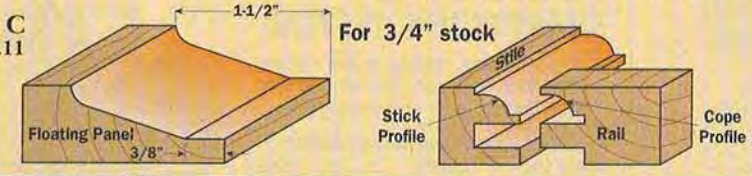

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Circle No. 1312

PRODUCTS THAT PERFORM — SHOP TESTED

Continued from page 86

Brad nailer uses no oil, prevents project stains

Keeping pneumatic nailers oiled is a balancing act—not enough oil and they won't function properly; too much and you get oil stains on your project. Sears solved this dilemma by introducing an economically priced brad nailer that requires no oil.

The Craftsman 18309 18-gauge brad nailer has a composite plastic cylinder that eliminates the need for oil. Plastic components also help make the 18309 about a half-pound lighter than its standard counterpart, the Craftsman 18343.

This nailer, which drives brads from ⅜" to 1¼" long, has a nicely finished, cast-aluminum body. The trigger was comfortable, and the contact safety worked well with minimal workpiece marring.

The easy-loading steel magazine holds sticks of 100 brads with a red indicator that shows when you run low. While I experienced no jams during testing, you clear such hang-ups by loosening two setscrews and removing the nosepiece. The oilless convenience and its $94.99 price make the 18309 a great value.

—Tested by Bob McFarlin

PRODUCT SCORECARD

Sears Craftsman model 18309 18-gauge oilless brad nailer

Performance	★ ★ ★ ★ ☆
Price	$94.99
Value	★ ★ ★ ★ ★

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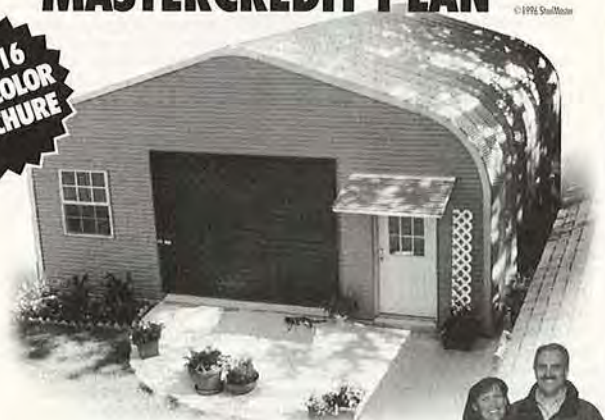

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Even though we introduced WOOD ONLINE, our internet woodworking information service, only a year ago, we've heard from lots of you saying you like having it available and find its features valuable. Like most other Internet sites, we started with the basics, and have been building more into our site gradually.

Our new home page, shown at *right*, gives you a quick rundown of what we have to offer you so far. In addition to the immensely popular WOOD® magazine Index and the other goodies we've had online, we've now added a Discussion Group to allow you and your fellow woodworkers to share ideas and communicate one on one. Why not give it a try?

There's much more to come in the months ahead, so stay tuned, stay online, and bookmark WOOD ONLINE. You'll be glad you did.

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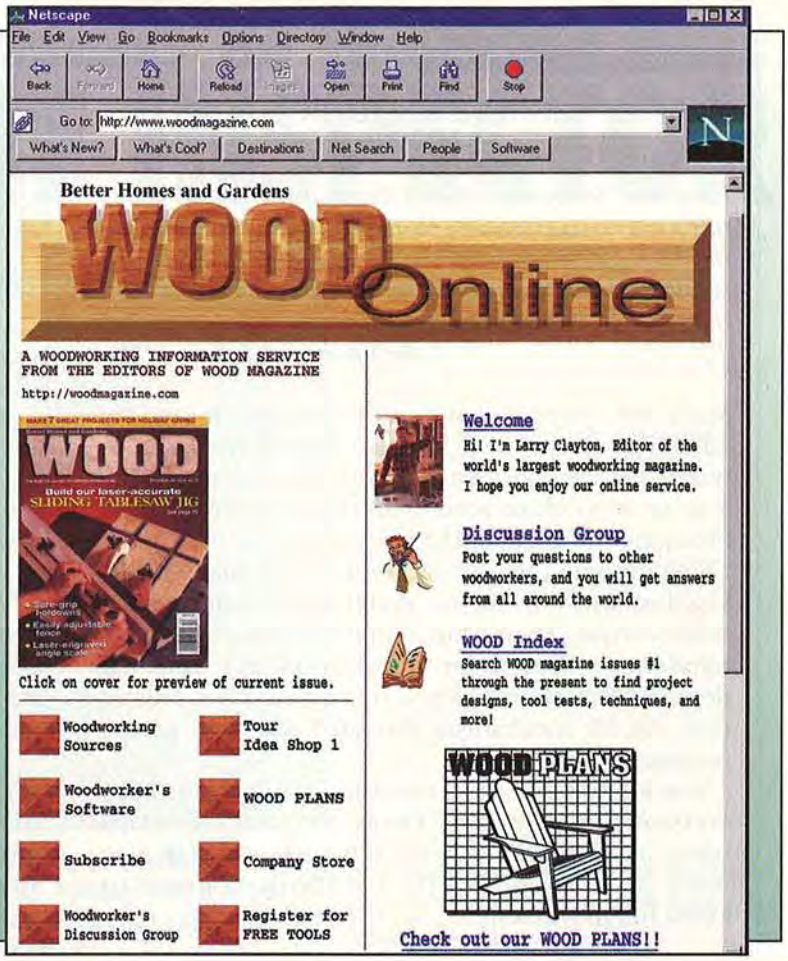
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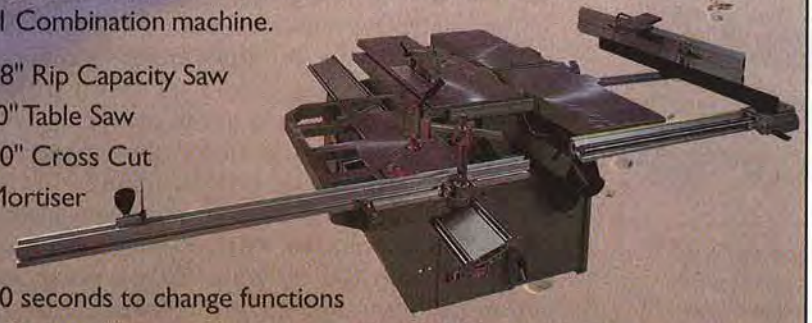

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Cranky tablesaw crank perplexes reader

I have a tablesaw that I have used for 8 years without any problems. However, over the past few months, the tilt-mechanism crank has become difficult to turn, and now the blade won't tilt all the way to 45°. What's the probable cause?

—Mark Buckland, Maumee, Ohio

Mark, we suspect that the tilt-mechanism and its adjusting screw have become fouled with a sawdust/lubricant mix that has built up over the years. You need to clean around all the parts involved in changing the angle of the blade arbor.

First, unplug the saw and remove the blade. Clear sawdust away from the mechanism using a stiff-bristle brush. Then, start tilting the arbor using the handcrank. Watch for and remove any sawdust deposits that appear as you move the arbor. Lightly coat the tilt mechanism threaded rod with grease or a spray lubricant.

You should find movement limiting bolts at both ends of the arbor tilt. These 45° and 90° stops often become fouled with sawdust, and will also need to be cleaned with a stiff-bristle brush to allow full movement.

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Wood movement in a humidor

How should I adjust a cigar humidor plan to compensate for wood movement? Wouldn't the humidity affect the cedar lining as well as the outer wood?

—George Hightower, Burneyville, Okla.

Humidity should have a minimal effect on the Spanish cedar lining, George, for a couple of reasons. First, Spanish cedar is a relatively stable wood, with a very low movement ratio caused by changes in humidity. Second, the dimensions of a cigar humidor are generally small enough that minimal wood movement doesn't cause a problem.

However, here are some ideas from our staff that will help ensure a stable humidor:

1 Use quartersawn (also called vertical-grain) wood to make the humidor case. Quartersawn wood will move less across its width than will flatsawn wood. This will allow movement of the hardwood case sides to more closely match the movement of the Spanish cedar linings.

2 Allow the top and bottom panels to float in a frame. They should fit without looseness, but not be forced into the opening, either. As moisture enters the humidor, the panels will expand just slightly for a snug fit.

3 Use Spanish cedar for the humidor bottom. This will satisfy the requirement for a cedar lining on this surface, and make a good, stable bottom for the humidor at the same time.

Continued on page 98

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34-444 10" contractor's saw 649
34-555 sliding table attach 329
36-275 8-1/4" bnch table saw 269

28-280 14" 1 HP Bandsaw $699*

28-275 14" 3/4hp bandsaw 589*
33-055 8-1/4"sawbuck w/legs 619
37-154 6" jointerw/stand 1224*
17-90016-1/2" floor drill press 429
34-080 10" mitre saw 219
23-710 sharpening center 174

37-350A 8" Jointer w/Stand $1549*

43-355 1-1/2hp wood shaper 749*
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31-730 6"belt/12"disc sandr 1349
33-890 12" radial arm saw 1599
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36-220 10" Compound Mitre Saw $209

50-179 3/4 hp dust collector 399
36-906 52" Delta unifence 329
36-905 30" Delta unifence 249
32-100 plate jointer 279

22-675Y 15" Planer $1149* (Includes Stand & Extensions)

37-190 6" jointer w/stand 449
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36-755 10" cabinet saw 1149
36-751 10" cab w/30" unif 1299
36-752 10" cab w/50" unif 1399

50-901 3 HP, 230V Cyclone 2 Stage Dust Collector $1849

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50-903 5hp230v cycln colctr 2249
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8-12 air filtration system 489
18-34 accu miter ga. w/bar 149

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1791208 osc. spndle sndr 299
1791209 **New** 15" planer 1329
1791051 6"jointer w/stand 549
1791070 1-1/2 hp dust col 399

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ASK WOOD

Continued from page 94

How to rip thin strips

I have some Venetian blinds that I want to restore and use in an old house. Part of the work will be making some replacement slats. What is the best way of cutting these ⅛"-thick pieces?

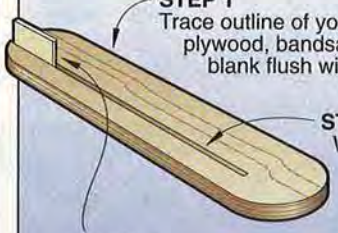
—George C. Finster, Tuckerton, N.J.

George, we suggest you rip these strips on a tablesaw equipped with a zero-clearance insert like the one shown *below*. The insert-mounted splitter will help keep the strips from moving into the blade during the ripping process. And use a wide push-block to move the strips through the blade.

Cut the slats 1/16" oversize in thickness to leave enough extra material to permit removal of saw marks. Then, send them through your planer or thicknessing sander to bring them to the final thickness. Use a plywood backing board to support these strips while planing.

The original slats were probably quartersawn for maximum flatness and stability. You can reproduce this on the new slats by slicing them off the edge of a thick, flatsawn board (see drawing *bottom*).

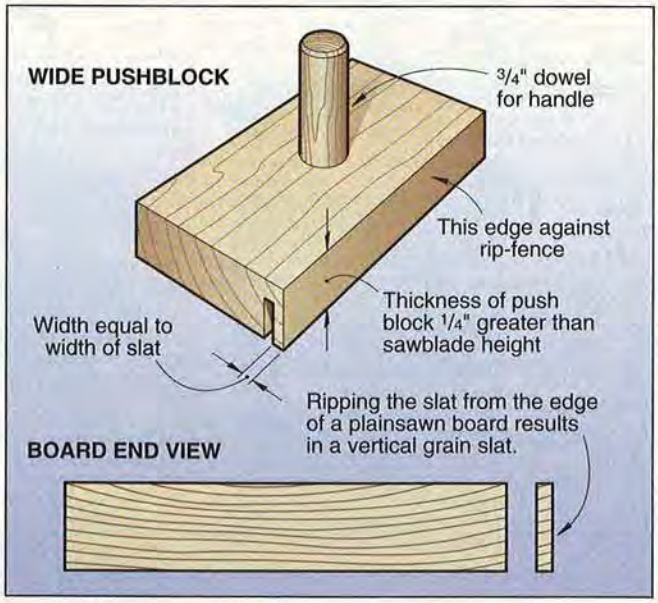
To make a zero-clearance tablesaw insert with splitter:



STEP 1
Trace outline of your tablesaw insert on ½"-thick plywood, bandsaw to shape. Rabbet or shim blank flush with table.

STEP 2
With the rip fence over the edge of the blank, raise running saw blade into the blank. Set rip fence to complete cut through the end of the blank.

STEP 3
Glue and clamp a ⅛ x 1½ x 3" hardboard splitter into kerf in end. Sand slight bevels on its leading edge.


WIDE PUSHBLOCK
¾" dowel for handle
This edge against rip-fence
Thickness of push block ¼" greater than sawblade height
Width equal to width of slat
Ripping the slat from the edge of a plainsawn board results in a vertical grain slat.
BOARD END VIEW

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DELTA TOOLS

Model	Description	List	Sale
31-280	Sanding Center w/ stand	1250	789
31-695	6" Belt/9" Disc Sander	441	349
23-700	Wet/Dry Grinder	206	149
23-710	New Sharpening Center	217	169
23-680	6" Bench Grinder 1/4 HP	80	69
11-950	8" Drill Press	176	128
31-460	4" Belt/Disc Sander	198	135
40-560	16" 2 speed Scroll Saw	230	165
40-540	NEW 16" var/spd Scroll Saw	249	189
11-990	12" Bench Drill Press	255	184
11-090	32" Radial Bench Drill Press	405	305
43-505	1/2" Bench Router/Shaper	398	299
22-540	12" Bench Top Planer	Sale	369
36-220	10" Compound Mitre Saw	294	199
28-185	Bench Band Saw	213	168
37-070	NEW 6" w/spd Bench Jointer	351	259
14-650	Hollow Chisel Mortiser	380	239
33-990	10" Radial Arm Saw	981	779
33-055	8-1/4" Sawbuck comp w/legs	846	665
36-905	30" Unifence	346	245
36-906	50" Delta Unifence	444	319
36-755	10" Tilting Arbor Saw	Sale	1019
17-900	16-1/2" Floor Drill Press	490	399
37-190	6" Deluxe Jointer	603	489
36-275	8-1/4" Builders Saw	358	268
36-210	10" Compound Mitre Saw	344	225
36-040	8-1/4" Compound Mitre Saw	190	135
36-070	10" Mitre Saw	217	165
34-555	Sliding Table	487	325
34-444	10" Contractors Table Saw	Sale	659
36-250	10" Slide Compound Saw	825	489
36-230	12" Compound Mitre Saw	480	345
31-780	Oscillating Spindle Sander	253	188

DELTA REBATES !
Prices shown are before rebate !
Rebates valid thru 3/31/97.

$25.00 rebate

46-700	12" Wood Lathe	575	465

$50.00 rebate

28-275	14" Band Saw 3/4 HP	Sale	635
28-280V	14" Band Saw 1 HP motor	Sale	798
34-445	10" Table Saw w/30" fence	Sale	839
22-675	NEW DC380 15" Planer	Sale	1175
43-355	3/4" Shaper 1-1/2 HP	Sale	799

$75.00 rebate

37-154	6" Jointer DJ-15	Sale	1289

MILWAUKEE TOOLS

6527	NEW Sawzall with case	343	169
6528	above Sawzall w/wired cord	339	185
6537-2	6527 w/quick lok blade change	224	175
0408-6	12V Drill w/kyls chuck&2 batt	380	172
0224-1	3/8" Drill 4.5 amp magnum	236	132
0234-1	1/2" Drill 4.5A mag 0-850 rpm	255	129
0235-1	1/2" Drill w/keyless chuck	255	129
0244-1	1/2" Drill 4.5A mag 0-600 rpm	255	129
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	213	119
0228-1	3/8" Drill 3.5 amp 0-1000 rpm	207	118
0375-1	3/8" close quarter Drill	255	148
0379-1	1/2" close quarter Drill	288	165
6546-1	cdls Screwdvr 200 & 400 rpm	150	89
6547-1	6546-1 w/bits,1/4" chuck & cs	185	108
5399	1/2" D-hdle Hammer Drill Kit	356	194
6507	Original SawZall with case	278	149
5397-1	3.8" v/ spd Hammer Drill Kit	275	145
5371-1	1/2" v/ spd Hammer Drill Kit	360	194
3107-1	1/2" v/spd right angle Drill Kit	411	234
3300-1	1/2" v/ spd right angle Drill	378	199
5680	Router 2 HP w/ collets	367	165
6142	4-1/2" Grinder w/cse & acc.	224	125
6365	7-1/4" Circular Saw 13 amp	229	125
6368	6365 w/fence, bide,& cse	259	142
6256	Top Handle Jig Saw	278	149
6490	10" Mitre Saw	496	265
6491	6490 w/ carbide blade & bag	594	328
6494	10" Compound Mitre Saw	585	315
0431-1	12V Drill w/ 2 batteries	441	239
6266-6	NEW Top Handle Jig Saw	315	165
6496	10" Slide Compound Saw	1050	569

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10" 40	69	42
LU82M010	Cut-off 10"	60	93	44
LU84M011	Comb 10"	50	78	42
LU85M010	Super Cut-off	10" 80	115	59
LM72M010	Ripping 10"	24	69	38
LU73M010	Cut off 10"	60	84	45
LU87M010	Thin Kerf 10"	24	72	44
LU88M010	Thin Kerf 10"	60	88	49
LU98M010	Ultimate 10"	80	128	68
LU91M010	Compnd Mitre 10"	60	88	54
F410	Quiet Blade 10"	40	95	49
F810	Quiet Blade 10"	80	135	74
TK303	7-1/4" Finishing	40	38	25
TK906	10" Combo	50	53	32
SD308	8" Dado - Carbide		230	119
SD506	6" carbide w/case & shims		292	145
SD508	8" carbide w/case & shims		344	168
FB100	16 piece Forstner Bit Set		338	194
94-100	5 pc. Router Bit Door System		320	169
BF3	NEW Router Table		495	289
FJ85	NEW Top Handle Jig Saw		229	125

The following tools have a $30.00 rebate thru 3/31/97; Price shown is before rebate.

FT2000E	3-1/4 HP variable speed Plunge Router	410	205
JS102	Biscuit Jointer w/fence & cs	355	179

NEW Freud Carbide Dado Blades

SD608	6" dial-a-width dado	389	199
SD606	6" dial-a-width dado	369	189
SD208	8" economy dado	155	85

WAP VACUUMS

Model	Description	List	Sale
766RDF	10 gallon turbo vacuum	845	465
766RDF-D	"Drywaller" 10 gal turbo vacuum	915	549
766RDF-DAS	Above vac w/ auto start	950	589

MAKITA TOOLS

6172DWE	3/8" v/spd Drill Kit w/ 2 batt	222	109
5090DW	3-3/8" Saw Kit 9.6 volt	280	148
DA391D	3/8 angle Drill 9.6V	166	109
DA391DW	3/8" angle Drill Kit 9.6V	341	179
ML900	Incandescent Flashlight 9.6V.		19.95
6095DWE	9.6 volt Drill Kit w/2 batt	Sale	125
6095DWLE2	6095DWE w/flashlight	Sale	135
6095D	6095DW Drill only & cse	Special	65
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28
6201DWHE	9.6V 3/8" Drill Kit w/2 batt	351	159
6211DWHE	12V 3/8" Drill Kit w/2 batt	368	169
6311DWHE	12V 1/2" Drill Kit w/2 batt	399	205

NEW CORDLESS DRILLS
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6213DWAE	12V 3/8" Drill Kit	325	179
6233DWAE	14.4V 3/8" Drill Kit	358	199

SUPER CORDLESS SPECIALS

6073DW	7.2V cdls Drill Kit. Variable speed & clutch. Complete with battery, charger, & case.	Super Sale	99
T220DW	9.6 volt Stapler Kit. Complete with battery, charger, & case	Super Sale	99

9900B	3"x21" Belt Sander w/bag	347	179
9924DB	3"x24" Belt Sander w/bag	360	189
4301BV	Orb. var. spd Jig Saw 3.5A	292	155
JR3000V	v/ spd Recip Saw w/case	264	135
9820-2	Blade Sharpener	433	215
N1900B	3-1/4" Planer with case	263	129
1912B	4-3/8" Planer	352	189
N9514B	4" Disc Grinder 4.6 amp	118	65
DA3000R	3/8" Angle Drill	355	175
2708W	8-1/4" Table Saw	637	309
6405	3/8" Drill Rev. 0-2100 rpm	115	65
6510LVR	3/8" Drill Rev. 0-1050 rpm	188	98
6013BR	1/2" Drill Rev. 6 amp	270	145
9401	4" x 24" Belt Sander w/bag	458	219
5007NBK	7-1/4" Circ Saw w/ case	250	125
5037NB	NEW 7-1/4" Circular Saw	288	148
LS1011	10" Slide Compound Saw	995	429
LS1211	12" Slide Cmpnd Saw	1620	779
3901	Plate Joiner Kit	376	199
3612C	NEW 3 HP Plunge Router	492	259
LS1040	NEW 10" Cmpnd Miter Saw	460	259

SENCO AIR NAILERS

SFN1+	Finishing Nailer 1" - 2" w/ cs	448	345
SN325	Nailer 1-7/8" - 3-1/4"	665	419
SLP20	Pinner w/cs 5/8 -1-5/8"	422	275
SKS	Stapler 5/8" - 1-1/2"	390	275
SN70	Framing -Clip Hd 2"-3-1/2"	725	449
SN60	Framing -Full Hd 2"-3-1/2"	708	449
SN65	15% more power than SN60	709	459
SFN40	Finish Nailer 1-1/4 - 2-1/2	569	389

BOSTITCH AIR NAILERS

N80S-1	Stick Nailer	Super Sale	339
N80C-1	Coil Nailer	Sale	339
RN45	Coil Roof Nailer 3/4 - 1-3/4	845	369
N60FN-2K	Finishing Nailer w/ case	557	299
BT35-2	Brad Tacker 5/8" - 1-3/8"	254	155
BT35-2K	BT35-2 w/ cse, oil, & brads	279	165
CWC100	1 HP Pancake Compressor	440	289
MIIIFS	Flooring Stapler 15 gauge	902	529
S32SX-1	Finish Stapler-1/2" - 1-3/8"	245	155
S32SX-1K	S32SX-1 with case & oil	269	165

SKIL TOOLS

77	7-1/4" Worm Drive Saw	Sale	144
77M	77 Mag Worm Saw	Sale	165

PANASONIC CORDLESS

EY6181CRKW	9.6V Drill Kit w/ 2 batteries, 1 hour charger, & case	307	169
EY6100EQKW	12V Drill kit w/ 2 Ironman batteries, 15 min. charger, & case	379	194
EY6100SEQK	Same as above but has 1 Ironman battery and 1 diagnostic battery	Sale	204
EY6101SQK	12 volt 1/2" Drill w/ 15 min. charger, diagnostic battery, & case	438	249
EY6101EQKW	Same as above but has two Ironman batteries	Sale	249
EY3502EQKW	NEW 4-3/8" 12V Metal Cutting Saw Kit	500	289

PASLODE IMPULSE GUNS

IM250	Trimpulse Finish Nailer Kit.	1130	548
IM325	Impulse Framing Nailer Kit	1130	548
CT325SS	Cdls Framing Nailer Kit	1120	495

CLAYTON OSCILLATING SPINDLE SANDERS

140	Portable sndr w/ 4-1/2" spindle	625	559
146	Portable sander w/ 9" spindle	685	609
100	Floor mount sndr 4-1/2" spindle	785	709
106	Floor mount sander 9" spindle.	845	759

SIOUX TOOLS

8030	3/8" var/spd Drill	263	145
8000	3/8" var/spd close qtr Drill	211	125
690	5" Air Random Orbit Sander	228	132

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Sale 249

DW936K
Saw Kit
Sale 249

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High Performance Industrial Tools

DEWALT TOOLS

Model	Description	List	Sale
DW321K	NEW Jigsaw Kit	300	164
	DW321K comes w/ Free 8 piece blade set		
DW364	7-1/4" Circ. Saw w/brake	294	158
DW610	1-1/2 HP 2 handle Router	266	152
DW411	1/4 sheet Palm Sander	88	58
DW100	3/8" Drill, 4 amp,0-2500 rpm	118	68
DW682K	Biscuit Joiner with case	448	199
DW705	12" Compound Mitre Saw	734	359
DW705K	DW705 with 80 tooth blade	Sale	395
DW625	3 HP v/ spd PlungeRouter.	Sale	275
	DW625 router comes with DW6966 fine depth adjuster and 8-piece template guide set		
DW621	NEW 2 HP Plunge Router	400	218
	DW621 comes with Free DW6956 fine height adjuster		
DW675K	3-1/8" Planer with case	292	164
DW431	3 x 21 v/spd Belt Sander	338	184
DW421	5" Palm Ran. Orb Sander	144	74
DW444	6" Ran Orb Sander	266	139
DW443	DW444 w/hook & loop pad.	266	139
DW673K	NEW Laminate Trimmer Kit	364	188
DW935K	14.4V 5-3/8" Trim Saw Kit with 2 batteries	444	237

DEWALT CORDLESS DRILLS

DW952K	3/8" variable speed w/ two 9.6V XR batteries	284	139
DW962K-23/8	variable speed w/ two 9.6V XR batteries	330	179
DW972K-23/8	variable speed w/ two 12V XR batteries	362	182
DW904	12 volt flashlight	48	29.95
	DW972K-2 drill & DW904 flashlight Sale 205		
DW991K-23/8	variable speed w/ two 14.4V XR batteries	415	209
DW994KQ	1/2" variable speed w/ one 14.4V XR batteries	458	235
DW994KQ-2	above drill w/ 2 batt.	Sale	259
DW996K	1/2" v/spdw/ two 14.4 XR batt		245
	Above drill kits come w/ charger & steel case!		
DW991KS-2	DW991K drill, DW935 trim saw, & case	Sale	349

HITACHI TOOLS

C8FB2	8-1/2" Slide Compound Saw	1169	489
C10FC	10" Mitre Saw	533	199
C10FS	10" Slide Compound Saw	1627	739
C15FB	15" Mitre Saw	1346	659
NR83A	Framing Nailer 2 - 3-1/2 Full Head	900	389
NR83AA	Framing Nailer 2 - 3-1/2	922	375
NV45AB	Coil Roofing Nailer 7/8 - 1-3/4	935	435
EC6B	1 HP Oil Compressor	540	279
EC6C	1 HP Oil-less Compressor	580	295
C7SB	7-1/4" Circular Saw	Sale	89
FDS10DVA	9.6V Drill Kit w/ flashlight	Sale	99

BIESEMEYER FENCES

B-50	50" Commer. Saw	443	325
T-SQUARE 52	52" Homeshop	360	269
T-SQUARE 40	40" Homeshop	335	249
T-SQUARE 28	28" Homeshop	325	239

PONY CLAMP FIXTURES

Model	Description	List	Sale	Lots of 12
50	3/4" Black Pipe	15.45	8.10	92.50
52	1/2" Black Pipe	12.65	6.95	74.95

BOSCH

Model	Description	List	Sale
1587VS	Top Handle "CLIC" Jig Saw	292	139
1587VSC	1587VS saw with case	Sale	149
1584VS	Barrel "CLIC" Jig Saw	288	139
	Bosch Metal Case for above Jig Saws		24
	Bosch 30 blade assortment for Jig Saws		28.99
	1584VS or 1587VS with steel case and 30 Bosch blades	Sale	175
3270DVS	3"x21" v/spd Belt Sander.	301	165
1276D	4"x24" Belt Sander	379	219
1275DVS	3"x24" v/s Belt Sndr	379	219
1276DVS	4"x24" v/s Belt Sndr	408	219
1347AK	4-1/2" Grinder w/cs & acc.	172	105
1194VSR	1/2" v/ spd Hammer Drill	272	155
1194VSRK	above Drill w/ case	303	169
1604A	1-3/4 HP 2 Handle Router	269	142
1604AK	same as above w/cse & acc	337	185
1613EVS	2HP v/s Plunge Router	369	199
1615EVS	3 HP v/s Plunge Router	536	289
1634VSK	Recip Saw 10.5 amp	335	159
3310K	12V T-handle Drill Kit	345	175
3610K	14.4V Drill Kit	354	195
3107DVS	5" Random Orbit Sander	165	98
3107DVSK	3107DVS with case	195	115
3725DVS	5" Random Orbit Sander	256	149
3727DVS	6" Random Orbit Sander	266	154
B3915	10" Slide Compund Saw	1050	589
B7000	Corner Detail Sander	126	68
B7001	B7000 w/ variable speed	Sale	89.95
B4050	In Line Jig Saw	206	112
11224VSR	7/8" SDS Rotary Drill	404	229

STABILA LEVELS

24740	24" Angle Setter Level	Sale	14.95
24640	24" Level w/ hand holes	62.20	43
24670	48" Level w/ hand holes	79.70	55
24680	72" Level w/ hand holes	145.45	99
27170	48" Level w/o hand holes	71	49
27000	78" Level w/o hand holes	146	105
80LMS	NEW Laser Level System	532	365

AIRY AIR NAILERS

Model	Description	List	Sale
0241SK	Brad Nailer 3/8"-1 9/16"	180	96
0250SK	Brad Nailer 3/4"-2"	296	164
0626SK	1/4" Crown Stapler 3/8"-1"	194	104
0645	1/4" Crown Stapler 3/4"-1-9/16"	310	175
	Above Nailers come w/case, fasteners, oil & wrenches		
0565T	Angle Finish Nailer 1"-2-1/2"	386	205

RECORD WOODWORKING VISES

Model	Jaw\Width	Opening	List	Sale
53E	10-1/2"\15"	Quick release	248	99
52D	7"\8"	Quick release with dog	169	85
52-1/2D	9"\13"	Quick release with dog	231	95

PORTA NAILER

401	Porta Nailer complete	295	209
501	Face Nailer complete	295	209

DAVID WHITE

LP6-20	Sight Level package - 20x	329	215
LP6-20XL	LP6-20 w/9056 tripod & 7620 rod	269	
LT8-300	Level Transit - 26x	739	489
LT8-300P	above Level with optical plum	869	565
LT6-900	Level Transit - 20x	419	269
ALT6-900	Auto Level - Transit -18x	666	429
ALTP6-900	above Level with tripod & rod	799	499
ALP6-18HD	above Level with tripod & rod	599	395
LL100	Finish Line Laser Level	199	135
ML200	NEW Visible Beam Laser	979	799
ML200I	ML200 w/o detector & rod bracket	749	625

RY0BI SPECIALS

RE600	3 HP Plunge Router	500	228
BE321	3"x21" v/ spd Belt Sander	310	139
BT3000	10" Table Saw w/ stand	1125	529
AP12	12" Bench Planer	884	389
OSS450	Oscillating Spindle Sander	340	159
HT20VSK	NEW Multi Tool	115	55
CD125K	12V cordless Drill w/ 2 batt	175	109
CTH1442K	14.4V 3/8" Drill Kit	275	159
WDS1600	16"x32" Drum Sander	980	569
DBJ50	NEW Detail Biscuit Jointer	114	69

Msxe6362	FEIN Triangle Sander v/spd		199
Msx625	FEIN New Air Triangle Sander		195
LPN672	PONY Air Palm Nailer w/glove		89
RTM01	ROTOZIP Drywall cut out unit		68.95

QUAL-CRAFT PRODUCTS

2200	Pump Jack	79	58
2201	Pump Jack Brace	30	20
2203	Pump Jack guard rail holder	31	21
2204	Workbench & rail holder combo	53	39
2500	Adjustable Roofing Bracket	9.95	7.95
	Buy any 6 (can be assort.) deduct 10%		
2601	Wall Jack	167	108
	Lots of 4 deduct additional 10%		

PORTER CABLE

9444	New Profile Sander Kit	220	119
7499	Ultimate Cut-out tool	119	69
97499	7499 w/ case & bits	150	89
690	1-1/2 HP Router 8 amp	278	142
90690	690 Router w/ steel case	309	159
691	1-1/2 HP Router D-handle	303	158
693	1-1/2 HP Plunge Router Base	338	184
6931	Plunge Router Base	139	79
695	1-1/2 HP Router/Shaper	418	235
696	Heavy Duty Shaper Table	238	135
352VS	3x21v/s Belt Sander w/bag	321	165
360	3"x24" Belt Sander w/ bag	397	214
362	4"x24" Belt Sander w/ bag	412	224
97751	1/2" w/spd Hammer Drill w/cse	274	155
9125	NEW 3-1/4" Planer Kit w/ case	250	145
9118	Porta Plane Kit 7 amp	400	229
505	1/2 sheet Pad Sander	249	129
97549	Top handle Jig Saw 4.8 amp w/ case & blades	275	144
330	Speed Block Sander 1/4 sheet	120	65
556	Biscuit joiner w/5556 fence	Sale	139
345	6" Saw Boss 9 amp	207	114
9345	345 comp. w/cse & carb blde	237	138
9647	TIGER CUB Recip. Saw	230	134
9637	Full var/spd Recip Saw 8 amp	276	148
7519	3-1/4 HP Router 2 Handle	469	255
7518	3-1/4 HP 5 speed Router	534	279
7539	3-1/4HP v/spd Plunge Router	534	279
7310	5.6 amp Laminate Trimmer	176	98
97310	Laminate Trimmer Kit comp	336	189
7335	5" Random Orbit Sander	254	135
97355	7335 w/ case & dust pick-up	274	145
7336	6" Random Orbit Sander	259	138
97366	7336 w/ case & dust pick-up	284	149
73333	Dust Collection system		24.50
332	Palm Grip Rndm Orb Sander	133	72
333	above sander with dust bag	148	79
334	333 Sander with PSA pad	148	79
550	Pocket Cutter with case	352	195
310	Production Lam. Trimmer	270	152
347K	7-1/4" "Framers" Circ Saw with plastic case	250	129
743K	7-1/4" "Framers" Circ Saw with case - left hand version	250	129
447	347 Saw with brake	259	139
7800	Drywall Sander	589	335
9737	Tiger Recipro Saw	307	165
BN125	Brad Nailer -18 ga. 5/8"- 1-1/4"	144	89
BN200	Brad Nailer -18 ga. 3/4"-2"	238	139
FN200	Finish Nailer -16 ga. 3/8"-2"	270	165
FN250	Finish Nailer -16 ga. 1"-2-1/2"	362	215
DA250	Angle Nailer -15 ga. 1-1/4"-1-1/2"	412	219
FC350	Framing Nailer - clipped head	558	319
FR350	Framing Nailer - round head	558	319
9830	NEW 9.6V Drill Kit w/ 2 batt	284	139
9962	NEW 12V Drill Kit w/ 2 batt	382	179
9872	NEW 14.4V Drill Kit w/ 2 batt	424	205

FREE FREIGHT TO THE CONTINENTAL STATES ON EVERY ITEM • GIFT CERTIFICATES NOW AVAILABLE

A special *Queen Elizabeth II* souvenir

Do you bring home curio shop souvenirs from memorable vacations? Victor Carsten, a *WOOD*® magazine reader from Sun City, Arizona, has a better suggestion for fellow woodworkers: Bring wood home and make your own.

"My wife and I took a Dream of a Lifetime vacation last year," Vic explained in his letter. "We sailed to England aboard the *Queen Elizabeth II* (in just under six days) and returned via the *Concord SST* (in 3½ hours). On the ship, I sought a one-of-a-kind souvenir. Spotting a friendly-looking officer, I explained my woodworking hobby and asked if they might have any wood around that I could take home.

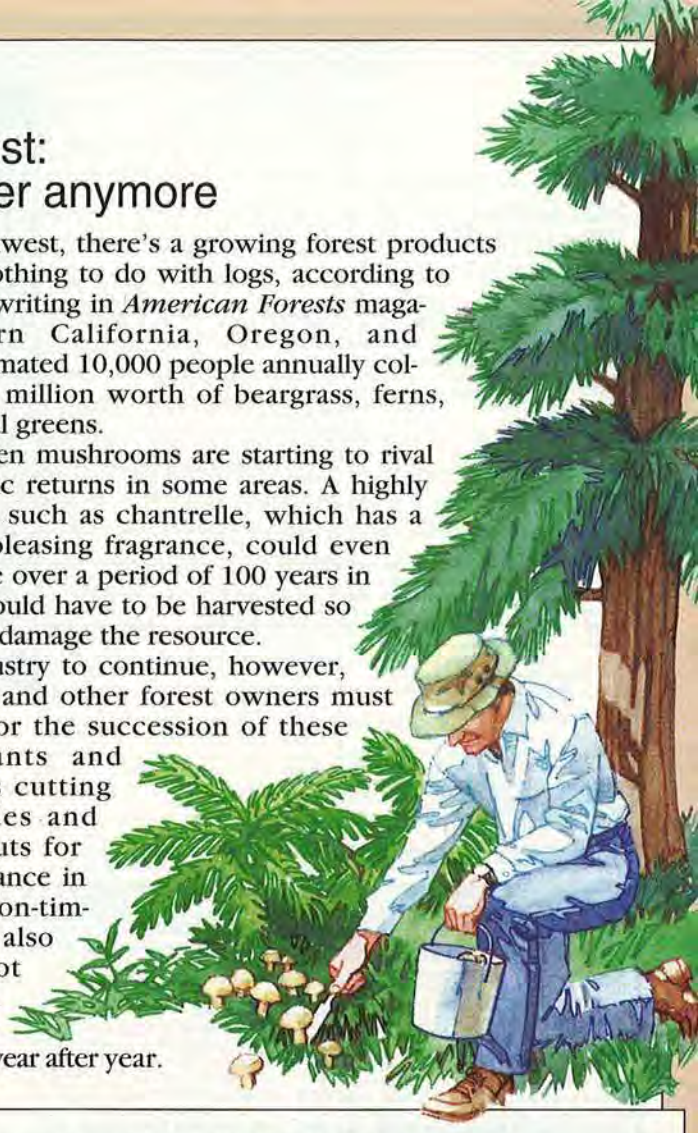
"Within an hour, a 5×14" piece of beautiful oak was delivered to our cabin," he continued. "It apparently was left over from a dance-floor installation, since it has a heavy-duty finish on one side." Vic plans to make lapel pins and bola ties in the shape of the Concord airplane for his wife and him from the souvenir wood. "I don't know what I'll do with whatever wood is left," he concluded, "but its origin will never be forgotten."

Forest harvest: not just timber anymore

In the Pacific Northwest, there's a growing forest products industry that has nothing to do with logs, according to Jane Braxton Little writing in *American Forests* magazine. In northern California, Oregon, and Washington, an estimated 10,000 people annually collect and sell $12.9 million worth of beargrass, ferns, salal, and other floral greens.

Little says that even mushrooms are starting to rival timber for economic returns in some areas. A highly marketable species such as chantrelle, which has a golden color and pleasing fragrance, could even exceed timber value over a period of 100 years in certain places. It would have to be harvested so as not to deplete or damage the resource.

For this new industry to continue, however, lumber companies and other forest owners must manage to allow for the succession of these niche-market plants and fungi. That means cutting back on herbicides and planning timber cuts for less ground disturbance in gathering areas. Non-timber entrepreneurs also must learn how not to ruin the seed stock so that they can harvest year after year.



Breathe better in the woods

In a vigorously growing young forest, each pound of wood daily removes 1.47 pounds of carbon dioxide from the atmosphere. It then replaces it with nearly the same amount of life-sustaining oxygen, according to studies done by the Southern Forest Products Association.

Bubinga rides the waves

Should you happen to some day board Royal Caribbean Cruise Lines' new ship, *Splendour of the Seas*, check out the hardwood sculptures flanking the main staircase on the fifth deck. The Oslo, Norway, ship line purchased the 42"-high pieces from artist and woodworker Robert Longhurst of Chestertown, New York, as additions to its extensive floating collection of art from around the world.

Longhurst's sculptures, which he named "Arabesque X" and "Arabesque XXXIII" (shown *left*), were sculpted in bubinga, a non-endangered species from West Africa. He likes bubinga for its rich color, but its stability and hardness allow him to work it into thin, curved shapes without checking or cracking.

◄ Taking a Caribbean cruise? Look for this bubinga sculpture aboard the Royal Caribbean Cruise Lines' ship *Splendour of the Seas*.

Illustrations: Jim Stevenson Photograph: Courtesy of Robert Longhurst

SIMPLE. PERFECTION. A NEW DIMENSION IN PRECISE TABLE ROUTING.

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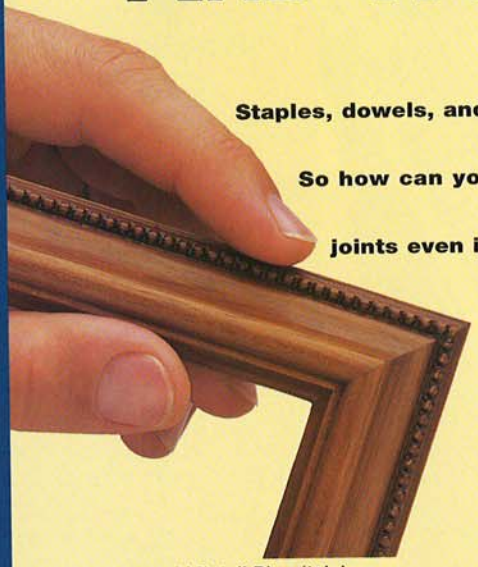
THE NEW RYOBI DETAIL BISCUIT JOINER

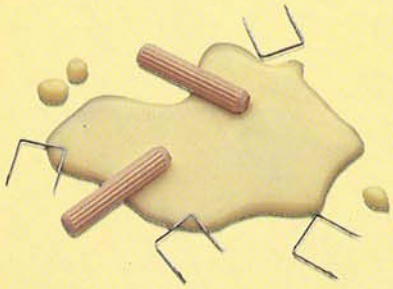
THE DIFFERENCE BETWEEN WOODWORKING AND WOODNOTWORKING.



Staples, dowels, and glue won't do. Standard-size biscuits won't fit.

So how can you make neat, tight, professional joints even in small stock? With Ryobi's new Detail Biscuit Joiner, that's how.

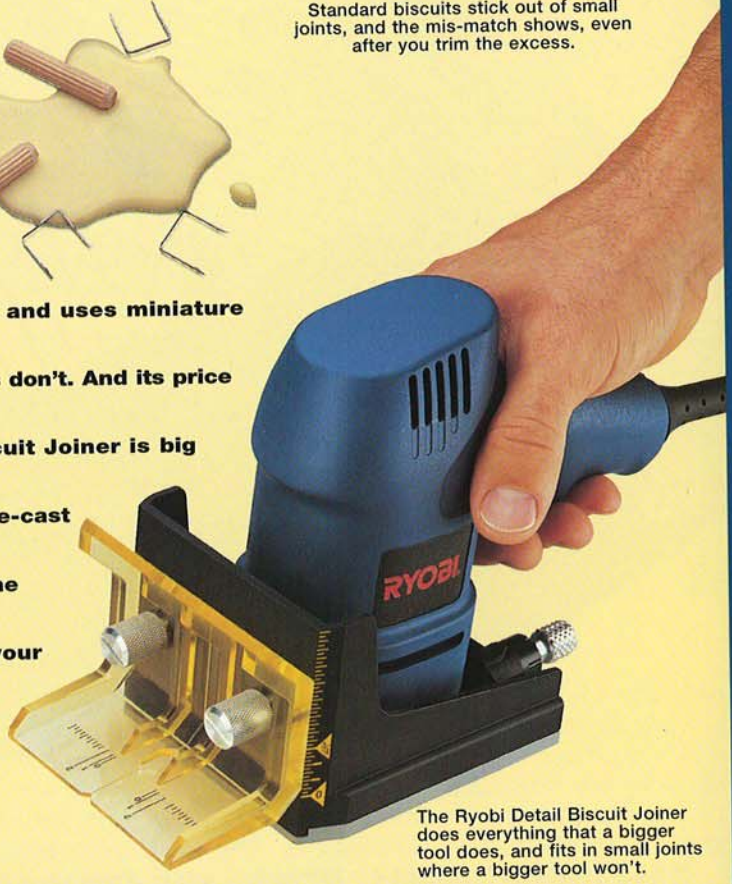
Standard biscuits stick out of small joints, and the mis-match shows, even after you trim the excess.



The new Ryobi Detail Biscuit Joiner uses miniature "Accu-biscuits" for neat, tight, professional joints.

This compact powerhouse cuts smaller slots and uses miniature "Accu-biscuits™" to fit where standard biscuits don't. And its price is as small as its biscuits. But the Detail Biscuit Joiner is big on performance, from its beefy motor to its die-cast base and see-through fence. So see the new Ryobi Detail Biscuit Joiner at your local home center. It'll get your wood working like never before.

Ryobi "Accu-biscuits" (actual size).



The Ryobi Detail Biscuit Joiner does everything that a bigger tool does, and fits in small joints where a bigger tool won't.

RYOBI

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Better Homes and Gardens®
WOOD® PATTERNS®
Full-sized for your woodworking convenience

APRIL 1997 **ISSUE 96**

Dear Reader: As a service to you, we've included full-sized patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.

- **Turned Table**
- **Cuckoo Birdhouse**
- **Drum-Sanding Table**

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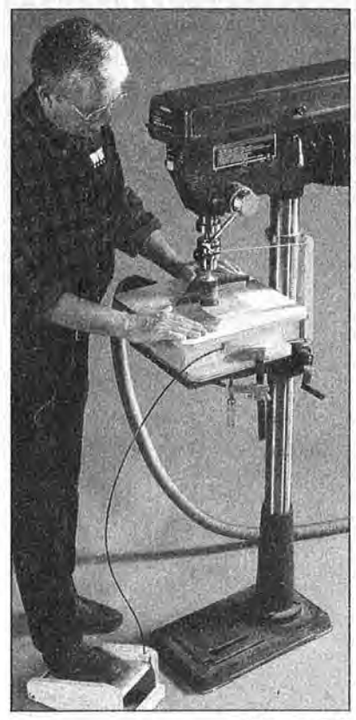

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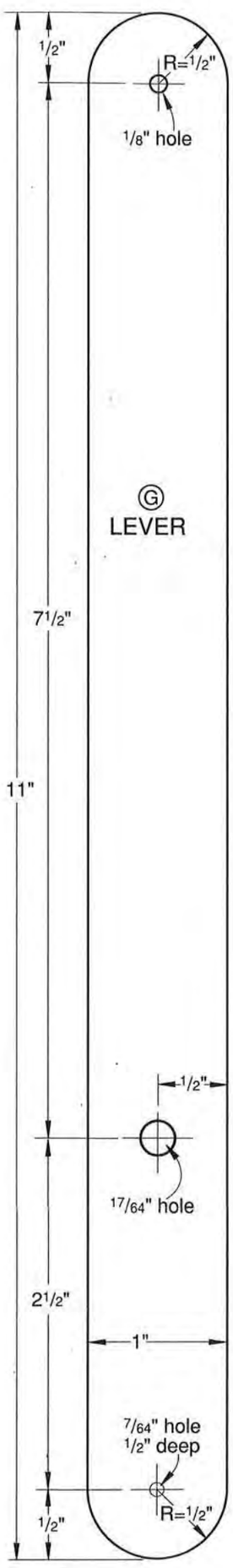
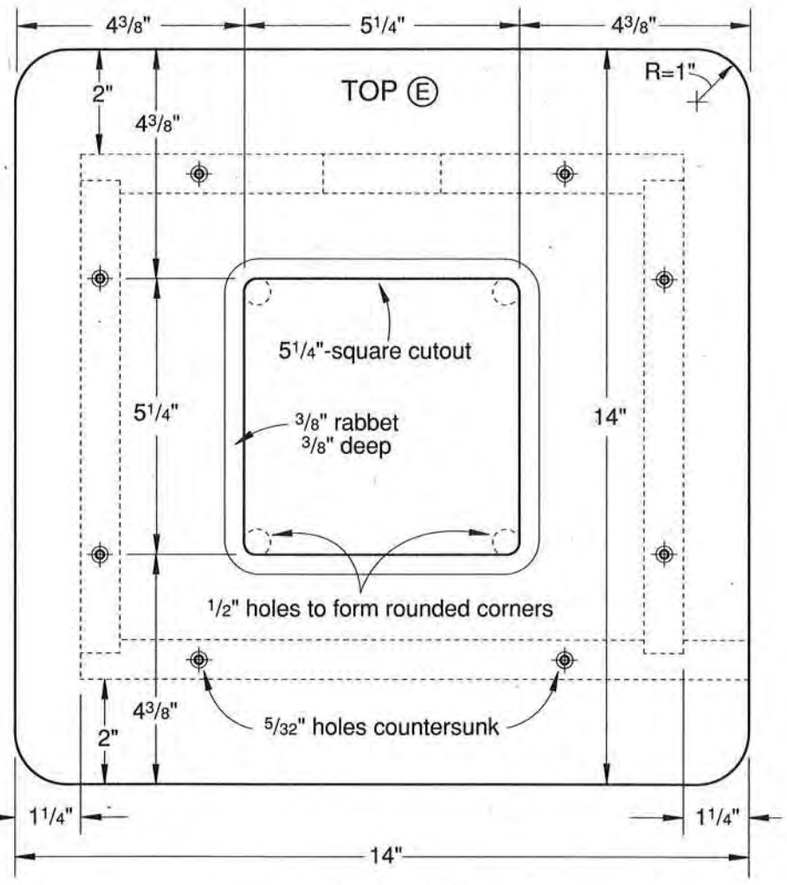
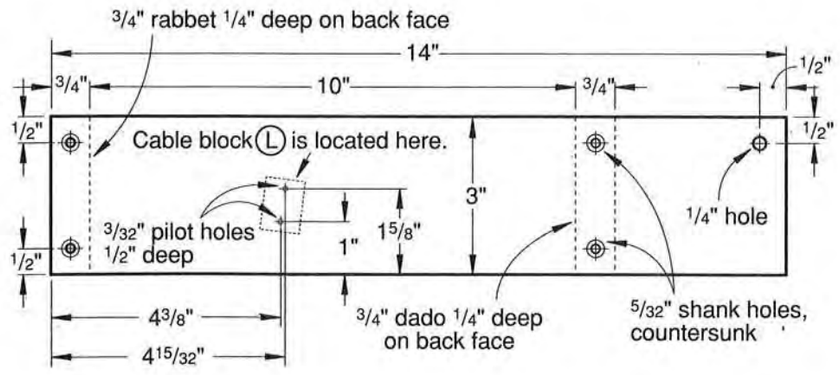


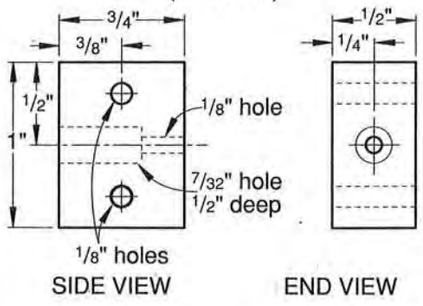


PARTS VIEW

RIGHT SIDE B

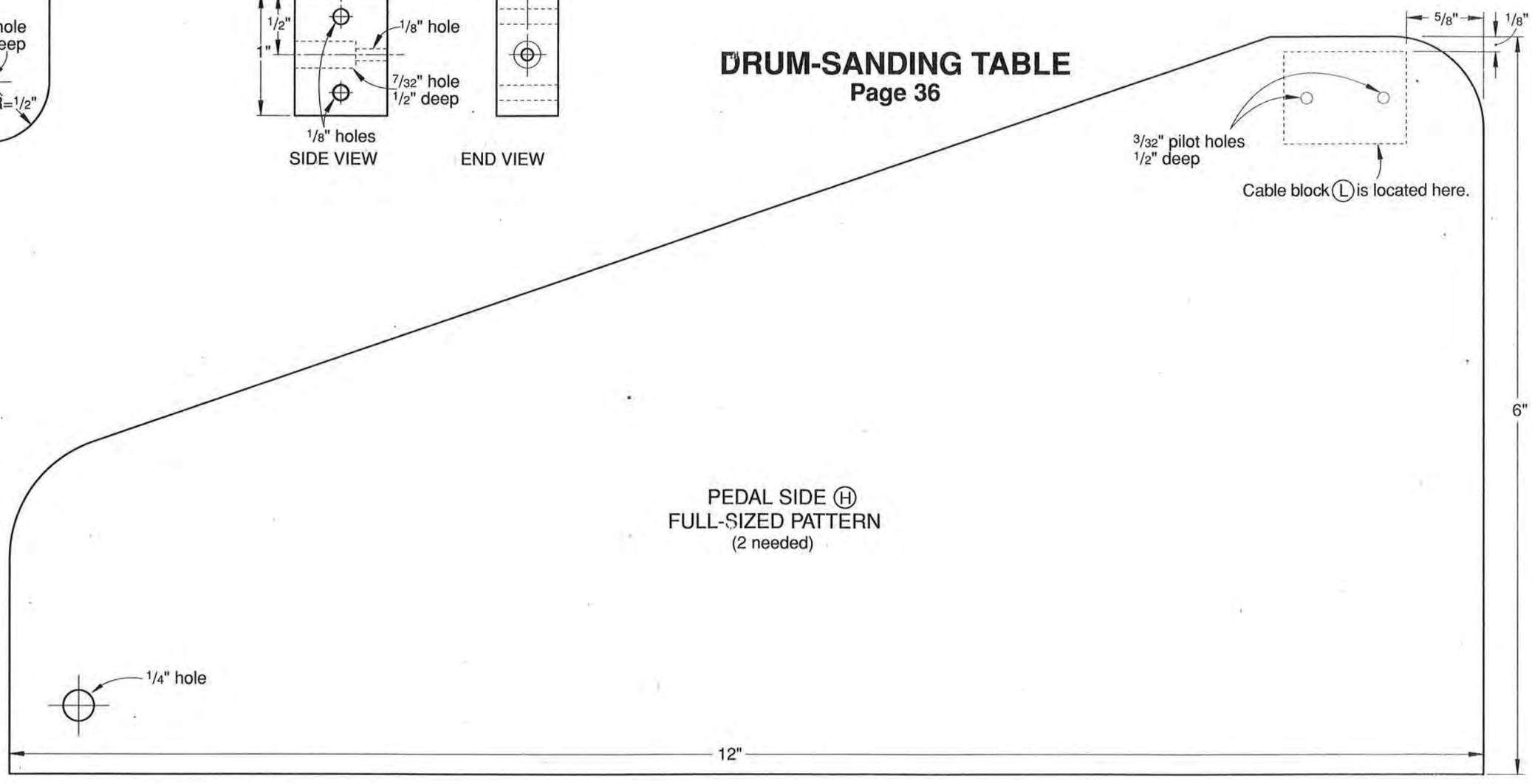


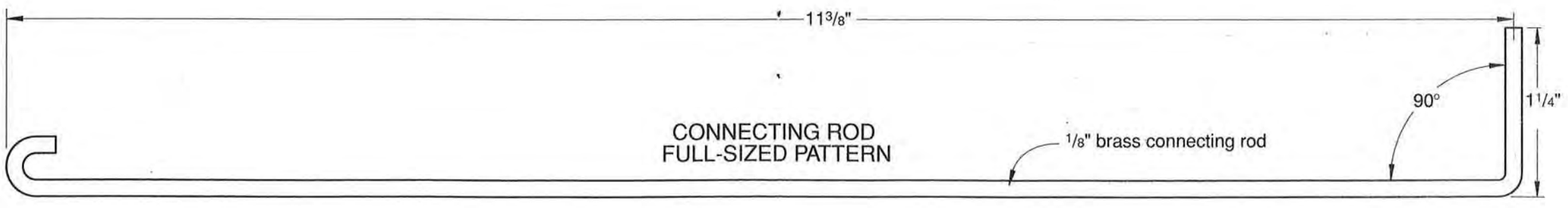
CABLE BLOCK L
FULL-SIZED PATTERN
(2 needed)



DRUM-SANDING TABLE
Page 36

PEDAL SIDE H
FULL-SIZED PATTERN
(2 needed)





SIDE Ⓑ
(bottom half)
(2 needed)

HANDS Ⓗ

CUCKOO BIRDHOUSE
Full-sized patterns
Page 68

BACK Ⓐ

14 3/8"

PENDULUM Ⓖ

5"

4

1" dia.

TURNED TABLE
Full-sized patterns
Page 42

10 1/2" dia.
11" dia.
10" dia.
8 1/2" dia.
7" dia.
Ⓔ
Ⓕ
TOP

12 3/4" dia.
12" dia.
7" dia.
Ⓓ
5 3/8" dia.
5" dia.
3 1/2" dia.
Ⓒ
Ⓑ
1" hole through part Ⓔ
5/32" shank hole, countersunk
1" hole through part Ⓑ and Ⓒ
BASE

SPINDLE BOTTOM Ⓐ
FULL-SIZED
HALF PATTERN

3" dia.
2
1 1/4" dia.
2" dia.
1 1/2" dia.
2" dia.
2 1/2" dia.
1" tenon 1 1/2" long
3" dia.
7/64" pilot hole
1" deep
1

1" tenon
3/4" long
1 3/4" dia.
3
1 3/8" dia.
1 3/4" dia.
1 1/4" dia.
1 5/8" dia.
1 1/4" dia.
2" dia.

SPINDLE TOP Ⓐ
FULL-SIZED
HALF PATTERN

4
1" dia.